

APPLICATION FOR CERTIFICATION

On Behalf of

Intel Corporation

Notebook

Model No.: HSBUB-SDS

FCC ID: RMXHSBUB-SDS

IC: 1000V-HSBUBSDS

Brand: Intel

Prepared for : Intel Corporation
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TEST REPORT CERTIFICATION

Applicant : Intel Corporation
 EUT Description : Notebook
 FCC ID : RMXHSBUB-SDS
 IC : 1000V-HSBUBSDS
 (A) Model No. : HSBUB-SDS
 (B) Serial No. : N/A
 (C) Brand : Intel
 (D) Power Supply : DC 19V or DC 20V
 (E) Test Voltage : AC 120V, 60Hz (Via AC Adapter)

Measurement Procedure Used:

FCC Rules and Regulations Part 15 Subpart C, Oct. 2012
 (FCC CFR 47 Part 15C, §15.205, §15.207, §15.209 and §15.247)

KDB 558074 D01 V02

Industry Canada Rules and Regulations RSS-Gen (Issue 3), December 2010 and
 RSS-210 (Issue 8), December 2010

(Canada RSS-210 §Annex 8)

AND ANSI C63.4:2003

The device described above was tested by AUDIX Technology Corporation to determine the maximum emission levels emanating from the device. The maximum emission levels were compared to the FCC Part 15 subpart C and Canada RSS-Gen, RSS-210 limits.

The measurement results are contained in this test report and AUDIX Technology Corporation is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT to be technically compliant with the requirements of FCC and Industry Canada RSS-Gen, RSS-210 standards.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of AUDIX Technology Corporation.

Date of Test: Dec. 25, 2012 ~ Feb. 04, 2013

Date of Report: Feb. 04, 2013

Producer: 
 (Tina Huang/Administrator)

Signatory: 
 (Leon Liu/Deputy General Manager)

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

Product	Notebook
Model Number	HSBUB-SDS
Serial Number	N/A
Brand Name	Intel
Applicant	Intel Corporation 2200 Mission College Blvd, Santa Clara, CA 95054-1549, USA
Mini HDMI Dongle	Cable: Non-Shielded, Detachable, 0.18m
HDMI Cable	Non-Shielded, Detachable, 1.8m
FCC ID	RMXHSBUB-SDS
IC	1000V-HSBUBSDS
Fundamental Range	<p>802.11b/g: 2412MHz ~ 2462MHz</p> <p>802.11a: 5180MHz ~ 5240MHz (UNII Band I) and 5260MHz ~ 5320MHz (UNII Band II) and 5500MHz ~ 5700MHz (UNII Band III) and 5745MHz ~ 5825MHz (UNII Band IV) 5250MHz ~ 5350MHz, 5470MHz ~ 5725MHz (DFS Function, Slave/no In service monitor, no Ad-Hoc mode)</p> <p>802.11n-HT20: 2412MHz ~ 2462MHz and 5180MHz ~ 5240MHz (UNII Band I) and 5260MHz ~ 5320MHz (UNII Band II) and 5500MHz ~ 5700MHz (UNII Band III) and 5745MHz ~ 5825MHz (UNII Band IV) 5250MHz ~ 5350MHz, 5470MHz ~ 5725MHz (DFS Function, Slave/no In service monitor, no Ad-Hoc mode)</p> <p>802.11n-HT40: 2422MHz ~ 2452MHz and 5190MHz ~ 5230MHz (UNII Band I) and 5270MHz ~ 5310MHz (UNII Band II) and 5510MHz ~ 5670MHz (UNII Band III) and 5755MHz ~ 5795MHz (UNII Band IV) 5250MHz ~ 5350MHz, 5470MHz ~ 5725MHz (DFS Function, Slave/no In service monitor, no Ad-Hoc mode)</p> <p>BT and BT Low Energy: 2402MHz ~ 2480MHz</p>

<p>Fundamental Range</p>	<p>GPRS/EGPRS 850: UL: 824MHz to 849MHz DL: 869MHz to 894MHz</p> <p>GPRS/EGPRS 1900: UL: 1850MHz to 1910MHz DL: 1930MHz to 1990MHz</p> <p>WCDMA Band: Band II: UL: 1850MHz to 1910MHz; DL: 1930MHz to 1990MHz</p> <p>Band IV: UL: 1710MHz to 1755MHz; DL: 2110MHz to 2115MHz</p> <p>Band V: UL: 824MHz to 849MHz; DL: 869MHz to 894MHz</p> <p>NFC: 13.56MHz</p>
<p>Frequency Channel</p>	<p>802.11b/g: 11 channels</p> <p>802.11a: UNII Band I: 4channels UNII Band II: 4 channels UNII Band III: 8 channels UNII Band IV: 4 channels</p> <p>802.11n-HT20: 2.4GHz: 11 channels 2.4G UNI Band I: 4channels UNII Band II: 4 channels UNII Band III: 8 channels UNII Band IV: 4 channels</p> <p>802.11n-HT40: 2.4GHz: 7 channels UNII Band I: 2channels UNII Band II: 2 channels UNII Band III: 5 channels UNII Band IV: 3 channels</p> <p>Bluetooth: 79 channels (GFSK, $\pi/4$DQPSK, 8-DPSK) 40 channels (Low Energy)</p> <p>GPRS/EGPRS 850: CH 128- CH 251</p> <p>GPRS/EGPRS 1900: CH 512-CH 810</p> <p>WCDMA Band: Band II: UL: CH 9262-CH9538; DL: CH 9662-CH9938</p> <p>Band IV: UL: CH 1312-CH1513; DL: CH 1537-CH1738</p> <p>Band V: UL: CH 4132-CH4233; DL: CH 4357-CH4458</p> <p>NFC: 1 Channel</p>
<p>Radio Technology</p>	<p>802.11b: DSSS Modulation (DBPSK/DQPSK/CCK)</p> <p>802.11g: OFDM Modulation (BPSK/QPSK/16QAM/64QAM)</p> <p>802.11a: OFDM Modulation (BPSK/QPSK/16QAM/64QAM)</p> <p>802.11n: OFDM Modulation (MIMO) (BPSK/QPSK/16QAM/64QAM)</p> <p>Bluetooth: FHSS (GFSK, $\pi/4$DQPSK, 8-DPSK) DSSS (Low Energy)</p> <p>WCDMA/HSPA/HSUPA/HSUPA+</p> <p>GSM/GPRS/EDGE</p> <p>GPS/AGPS</p>

Data Transfer Rate	802.11b: 1/2/5.5/11Mbps 802.11a/g: 6/9/12/18/24/36/48/54Mbps 802.11n: up to 300Mbps Bluetooth: 1/2/3Mbps GSM:DL 14.4kbps/UL 14.4kbps GPRS: DL 85.6kbps/UL 85.6kbps EGPRS:DL 236.8kbps/UL 236.8kpbs WCDMA CS: DL 64kbps/UL 64kpbs WCDMA PS: DL 384kbps/UL 384kbps HSPA+:DL 21.6Mbps/UL 5.76Mpbs
Date of Receipt of Sample	Dec. 18, 2012
Date of Test	Dec. 25, 2012 ~ Feb. 01, 2013
<p>Note: This EUT has 2.4GHz (WLAN, BT and Low Energy), 5GHz, GPRS/EGPRS, WCDMA and NFC function. See below for related test reports based on radio functionality.</p> <ol style="list-style-type: none"> 1. The 2.4GHz (BT) function has been test in other report of EM-F1020099. 2. The 5GHz (UNII Band II, III & IV) function has been test in other report of EM-F1020110. 3. The DFS function has been test in other report of EM-F1020111. 4. The NFC function has been test in other report of EM-F1020112. 5. The SAR function of IC has been test in other report of EM-F1020115 	

1.2. Antenna Information

Antenna Part Number	Manufacture	Antenna Type	Peak Gain	
			Frequency	Max Gain
Project Name: Harris Beach WLAN Antenna (Main) Part Number: 1556570	TE Connectivity	PIFA	2400MHz	1.24dBi
			2442MHz	0.63dBi
			2484MHz	1.93dBi
			5150MHz	0.74dBi
			5250MHz	0.64dBi
			5350MHz	0.24dBi
			5470MHz	-0.54dBi
			5600MHz	-0.20dBi
			5725MHz	-0.55dBi
			5785MHz	0.84dBi
			5800MHz	0.03dBi
			5850MHz	-0.29dBi
			Project Name: Harris Beach WLAN/BT Antenna (AUX) Part Number: 1556568	TE Connectivity
2442MHz	1.39dBi			
2484MHz	1.82dBi			
5150MHz	1.79dBi			
5250MHz	0.79dBi			
5350MHz	1.27dBi			
5470MHz	0.72dBi			
5600MHz	0.36dBi			
5725MHz	1.31dBi			
5785MHz	1.86dBi			
5800MHz	3.04dBi			
5850MHz	2.45dBi			

Antenna Part Number	Manufacture	Antenna Type	Peak Gain	
			Frequency (TX)	Max Gain
Project Name: Harris Beach WWAN Antenna (Main) Part Number: 1556567	TE Connectivity	PIFA	704MHz	-2.04dBi
			710MHz	-1.57dBi
			716MHz	-1.45dBi
			777MHz	-2.31dBi
			782MHz	-2.22dBi
			787MHz	-2.61dBi
			832MHz	-2.42dBi
			847MHz	-3.26dBi
			862MHz	-3.20dBi
			824MHz	-3.44dBi
			836MHz	-4.03dBi
			849MHz	-3.89dBi
			880MHz	-2.79dBi
			900MHz	-2.71dBi
			915MHz	-3.08dBi
			1710MHz	-4.09dBi
			1750MHz	-3.34dBi
			1785MHz	-3.77dBi
			1710MHz	-3.69dBi
			1732MHz	-3.43dBi
			1755MHz	-3.34dBi
			1850MHz	-3.88dBi
1880MHz	-2.86dBi			
1910MHz	-2.97dBi			
1920MHz	-3.30dBi			
1950MHz	-3.28dBi			
1980MHz	-2.86dBi			
2500MHz	-1.90dBi			
2535MHz	-2.29dBi			
2570MHz	-2.08dBi			

Antenna Part Number	Manufacture	Antenna Type	Peak Gain (dBi)	
			Frequency (RX)	Max Gain
Project Name: Harris Beach WWAN Antenna (AUX) Part Number: 1556569	TE Connectivity	PIFA	1575MHz	-3.67dBi
			1602MHz	-3.71dBi

1.3. Description of Key Component Lists

1.3.1. For the All Component Lists

Item	Supplier	Description	Character
System	Microsoft	Windows 8	---
Main Board	Flex	832-FIG-ITLH-G71865-400	PCBA for NB should not be listed separately
LCD Panel	Chimei Innolux Corp	N133HSE-EXX	13.3 inches TFT Type
CPU	Intel	---	Up to 3.3GHz
Graphics	Intel	Intel® HD Graphics with DX11	---
Memory	Samsung	---	4GB
SSD	Samsung	#1 MZ-C***** #2 MZ-D***** #3 MZ-E***** #4 MZ-N***** (* can be 0-9, A-Z, blank, slash or dash for different market purpose)	128GB
Keyboard	Kunshan YingHui Precision Electronic Co.	YH-BH12LCxx (xx=01 for US language; 02 for SP language)	--
Battery Pack	Getac Technology Corp	HB FFRD	7.5V, 7100 mAh, 53.25Whr
Web Camera	CHICONY Electronics Co., Ltd.	CKFCF01	---
WLAN+BT Combo Module	Broadcom	AW-NB136	IEEE 802.11a/b/g+ 2X2 n Bluetooth 4.0+Low Energy
WWAN	Huawei	MU736	WCDMA/HSDPA/HSUPA /HSPA GSM/GPRS/EDGE, GPS/A-GPS
WWAN Antenna	Main	TE Connectivity Ltd.	1556567
	AUX		1556569
WiFi/BT Antenna	Main	TE Connectivity Ltd.	1556570
	AUX		1556568
AC Adapter #1	Chicony	A12-045N2A	I/P: 100-240V~, 1.3A 50-60Hz O/P: 19V, 2.37A
	DC Power Cord: Non-Shielded, Undetached, 1.0m AC Power Cord: Non-Shielded, Detached, 1.8m		
AC Adapter #2	Delta	ADP-45BE AA	I/P: 100-240V~, 1.3A 50-60Hz O/P: 20V, 2.25A
	DC Power Cord: Non-Shielded, Undetached, 1.0m AC Power Cord: Non-Shielded, Detached, 1.8m		

Remark: For a more detailed features description, please refer to the manufacturer's specifications or the user manual.

1.3.2. For the EUT Test Configuration

Configuration	SKU #1
System	Microsoft, Windows 8
Main Board	Flex, 832-FIG-ITLH-G71865-400
LCD Panel	Chimei Innolux Corp., N133HSE-EXX
CPU	Intel, i7-4650U
Graphics	Intel, Intel® HD Graphics with DX11
Memory	Samsung, K4E8E304EB-EGCE, 4GB
SSD	Samsung, MZNTD128HAGM
Keyboard	YH-BH12LC01
Battery Pack	Getac Technology Corp, M/N HB FFRD
Web Camera	CHICONY Electronics Co., Ltd., CKFCF01
WLAN+BT Combo Module	Broadcom, M/N AW-NB136
WWAN	Huawei, M/N MU736
WLAN/BT Antenna	Main: TE Connectivity Ltd., 1556570 AUX: TE Connectivity Ltd., 1556570
WWAN Antenna	Main: TE Connectivity Ltd., 1556567 AUX: TE Connectivity Ltd., 1556569
AC Adapter	Chicony, M/N A12-045N2A
Resolution	1920*1080

1.4. Data Rate Relative to Peak Output Power

DTS 802.11b (2.4GHz)			
Channel	Modulation	Date Rate(Mbps)	Peak Power(dBm)
1	DBPSK	1	18.36
1	DQPSK	2	18.34
1	CCK	5.5	18.31
1	CCK	11	18.29

DTS 802.11g (2.4GHz)				DTS 802.11a (5.8GHz)			
Channel	Modulation	Date Rate (Mbps)	Peak Power (dBm)	Channel	Modulation	Date Rate (Mbps)	Peak Power (dBm)
1	BPSK	6	22.08	149	BPSK	6	21.57
1	BPSK	9	22.07	149	BPSK	9	21.56
1	QPSK	12	22.05	149	QPSK	12	21.55
1	QPSK	18	21.99	149	QPSK	18	21.54
1	16-QAM	24	21.97	149	16-QAM	24	21.54
1	16-QAM	36	21.96	149	16-QAM	36	21.52
1	64-QAM	48	21.96	149	64-QAM	48	21.48
1	64-QAM	54	21.95	149	64-QAM	54	21.47

DTS 802.11n-HT20 (2.4GHz)				DTS 802.11n-HT20 (5.8GHz)			
Channel	Modulation	Date Rate (Mbps)	Peak Power (dBm)	Channel	Modulation	Date Rate (Mbps)	Peak Power (dBm)
1	BPSK	6.5	24.38	149	BPSK	6.5	24.46
1	QPSK	13	24.37	149	QPSK	13	24.44
1	QPSK	19.5	24.35	149	QPSK	19.5	24.44
1	16-QAM	26	24.34	149	16-QAM	26	24.42
1	16-QAM	39	24.32	149	16-QAM	39	24.37
1	64-QAM	52	24.30	149	64-QAM	52	24.37
1	64-QAM	58.6	24.28	149	64-QAM	58.6	24.31
1	64-QAM	65	24.27	149	64-QAM	65	24.29

DTS 802.11n-HT40 (2.4GHz)				DTS 802.11n-HT40 (5.8GHz)			
Channel	Modulation	Date Rate (Mbps)	Peak Power (dBm)	Channel	Modulation	Date Rate (Mbps)	Peak Power (dBm)
3	BPSK	13.5	21.85	151	BPSK	13.5	24.23
3	QPSK	27	21.84	151	QPSK	27	24.21
3	QPSK	40.5	21.84	151	QPSK	40.5	24.21
3	16-QAM	54	21.81	151	16-QAM	54	24.20
3	16-QAM	81	21.80	151	16-QAM	81	24.18
3	64-QAM	108	21.76	151	64-QAM	108	24.17
3	64-QAM	121.5	21.77	151	64-QAM	121.5	24.15
3	64-QAM	135	21.74	151	64-QAM	135	24.13

1.5. Test Configuration for Each Test Item

Test Item	802.11b	802.11g	802.11n-HT20	802.11n-HT40
	Data Rate for Test(Mbps)			
6dB Bandwidth	1	6	6.5	13.5
Peak Power Spectral Density	1	6	6.5	13.5
Peak Output Power	1	6	6.5	13.5
Band Edge	1	6	6.5	13.5

1.6. Tested Supporting System Details

1.6.1. Support Peripheral Unit

No.	Product	Brand	Model No.	Serial No.	FCC ID
1.	Monitor	DELL	U3011T	CN-0C34G2-74445 -29I-031L	FCC DoC Approved
2.	USB 3.0 External HDD	BUFFALO	HD-LBU3	55292020409776	FCC DoC Approved
3.	USB Mouse	DELL	MS111-T	CN-0KW2YH-716 16-282-0XYP	FCC DoC Approved
4.	Earphone	APPLE	N/A	N/A	N/A
5.	SD Card	ADATA	AD4GSDHC4-S	N/A	N/A
6.	SIM Card	Taiwan Mobile	0907 41 003894 5	N/A	N/A
7.	AP Server	LG	Di-624	F34U177001194	KA2DI624D2
8.	Bluetooth Headset	INNOSTAR	IH-05	N/A	UU9MBH200

1.6.2. Cable Lists

No.	Signal Cable Description Of The Above Support Units
1.	N/A
2.	USB Cable: Shielded, Detachable, 1.0m
3.	USB Cable: Shielded, Undetachable, 1.8m
4.	Earphone Cable: Non-Shielded, Detachable, 0.9m
5.	N/A
6.	N/A
7.	N/A
8.	N/A

Note : 1. Support Unit 1: Power Cord: Non-Shielded, Detachable, 1.8m

2. Support Unit 2 AC Adapter: BUFFALO, M/N: WA-18H12, S/N: 219019279;
Cord: Non-Shielded, Undetachable, 1.5m

3 Support Unit 7 AC Adapter: D-Link, M/N: AM-91000A;
Cord: Non-Shielded, Detachable, 1.8m

4. The support units (7-8) are communicated partner system.

1.7. Description of Test Facility

Name of Firm	:	AUDIX Technology Corporation EMC Department No. 53-11, Dingfu, Linkou Dist., New Taipei City 244, Taiwan, R.O.C.
Test Site (C7/Semi-AC)	:	No. 7 Shielded Room & Semi-Anechoic Chamber No. 53-11, Dingfu, Linkou Dist., New Taipei City 244, Taiwan, R.O.C. May 11, 2012 Renewal on Federal Communication Commission Registration Number: 90993
NVLAP Lab. Code	:	200077-0
TAF Accreditation No	:	1724

1.8. Measurement Uncertainty

Test Item	Frequency Range	Uncertainty (dB)
Conduction Test	150kHz~30MHz	±1.73dB
Radiation Test (Distance: 3m)	30MHz~300MHz	± 2.91dB
	300MHz~1000MHz	± 2.74dB
	Above 1GHz	± 5.02dB

Remark : Uncertainty = $ku_c(y)$

Test Item	Uncertainty
6dB Bandwidth	± 0.05kHz
Maximum peak output power	± 0.33dBm
Band edges	± 0.13dB
Power spectral density	± 0.13dB
Emission Limitations	± 0.13dB

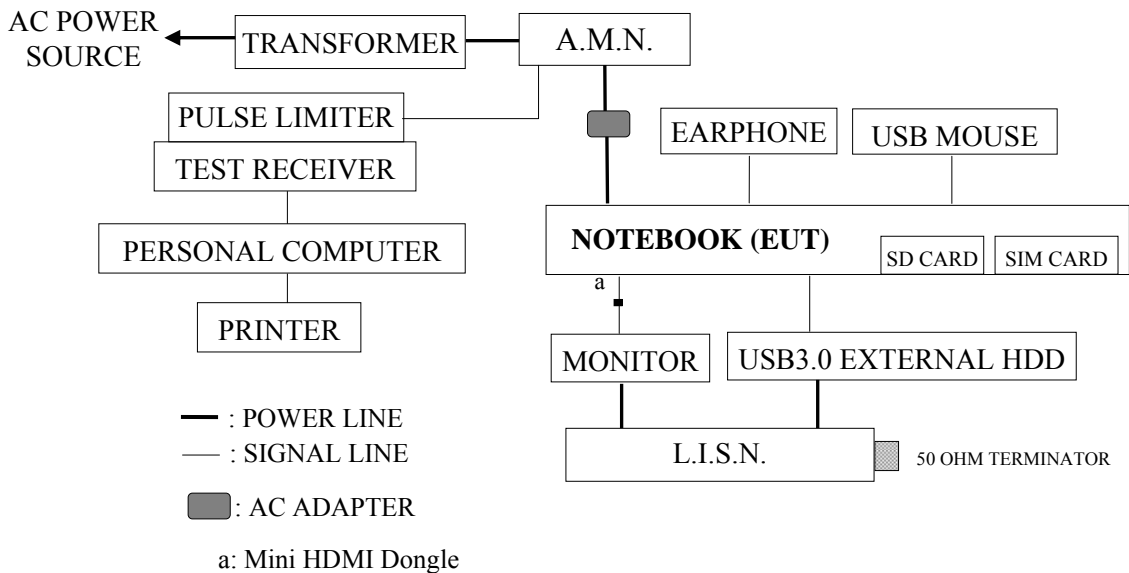
2. CONDUCTED EMISSION MEASUREMENT

2.1. Test Equipment

The following test equipment was used during the conducted emission measurement : (No. 7 Shielded Room)

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Test Receiver	R&S	ESCI	101276	Apr. 30, 12'	Apr. 29, 13'
2.	A.M.N.	R&S	ENV4200	100169	May 04, 12'	May 03, 13'
3.	L.I.S.N.	Kyoritsu	KNW-407	8-881-13	Feb. 01, 12'	Jan. 31, 13'
4.	Pulse Limiter	R&S	ESH3-Z2	101495	Mar. 26, 12'	Mar. 25, 13'

2.2. Block Diagram of Test Setup



2.3. Powerline Conducted Emission Limit [§15.207, Class B, RSS-Gen §7.2.2/Table 2]

Frequency	Maximum RF Line Voltage	
	Quasi-Peak Level	Average Level
150kHz ~ 500kHz	66 ~ 56 dB μ V	56 ~ 46 dB μ V
500kHz ~ 5MHz	56 dB μ V	46 dB μ V
5MHz ~ 30MHz	60 dB μ V	50 dB μ V

Remark 1.: If the average limit is met when using a Quasi-Peak detector, the EUT shall be deemed to meet both limits and measurement with the average detector is unnecessary.

2.: The lower limit applies at the band edges.

2.4. Operating Condition of EUT

- 2.4.1. Setup the EUT and simulator as shown on 2.2.
- 2.4.2. Turn on the power of all equipment.
- 2.4.3. Set to EUT (Notebook) on transmitting and receiving during all testing.

2.5. Test Procedure

The EUT was placed on the table which was above the ground by 80cm and it's adapter power cord connected to the AC mains through an Artificial Mains Network (A.M.N.). This provided a 50 ohm coupling impedance for the measuring equipment. (Please refer to the block diagram of the test setup and photographs.)

Both sides of A.C. line were checked for maximum conducted interference. In order to find the maximum emission, the relative positions simulators of the interface cables should be manipulated according to ANSI C63.4-2003, RSS-Gen and RSS-210 regulation during conducted measurement.

The bandwidth of the R&S Test Receiver ESCI was set at 10kHz.

The frequency range from 150kHz to 30MHz was checked.

All the final readings from Test Receiver were measured with the Quasi-Peak detector and Average detector. Remark: If the Average limit is met when using a Quasi-Peak detector, the Average detector is unnecessary)

2.6. Conducted Emission Measurement Results

PASSED.

(All the emissions not reported below are too low against the prescribed limits.)

EUT was performed during this section testing and all the test results are attached in next pages.

EUT: Notebook Model No.: HSBUB-SDS

Test Date: Dec. 25, 2012 Temperature: 25 Humidity: 52%

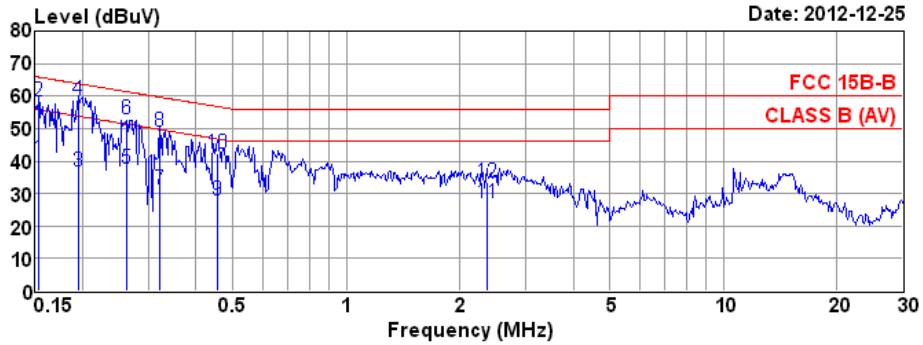
The details are as follows :

Mode	Reference Test Data	
	Neutral	Line
1.	# 4	# 3



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Data: 4 File: D:\test data\REPORT\IC1M1212XXX\IC1M1212198-C-D.EM6 (12)



Site no. : No.7 Shielded Room Data no. : 4
 Dis. / Ant. : ENV4200 Ant. pol. : NEUTRAL
 Limit : FCC 15B-B
 Env. / Ins. : 25°C / 52% ESCI (1276) Engineer : Fate
 EUT : HSBUB-SDS
 Power Rating : 120Vac/60Hz
 Test Mode : Operating

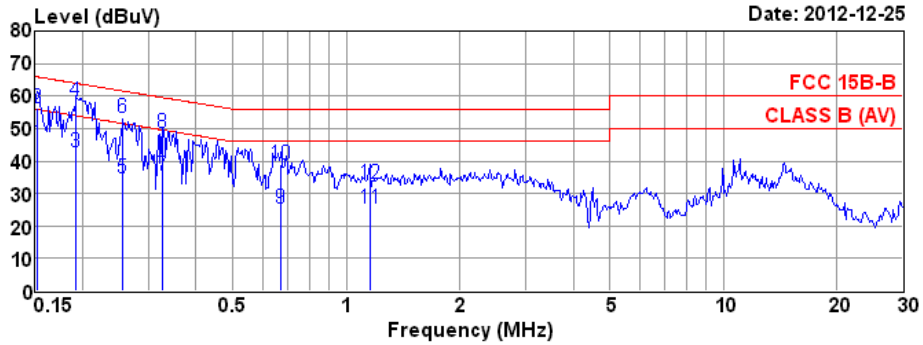
	Freq. (MHz)	AMN. Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.15	10.23	9.92	20.48	40.63	55.82	15.19	Average
2	0.15	10.23	9.92	38.10	58.25	65.82	7.57	QP
3	0.19	10.23	9.93	16.57	36.73	53.84	17.11	Average
4	0.19	10.23	9.93	38.65	58.81	63.84	5.03	QP
5	0.26	10.21	9.95	17.54	37.70	51.38	13.68	Average
6	0.26	10.21	9.95	32.62	52.78	61.38	8.60	QP
7	0.32	10.19	9.96	10.98	31.13	49.66	18.53	Average
8	0.32	10.19	9.96	28.89	49.04	59.66	10.62	QP
9	0.46	10.17	9.98	7.87	28.02	46.76	18.74	Average
10	0.46	10.17	9.98	22.28	42.43	56.76	14.33	QP
11	2.36	10.14	10.00	6.83	26.97	46.00	19.03	Average
12	2.36	10.14	10.00	13.29	33.43	56.00	22.57	QP

Remarks: 1. Emission Level= AMN Factor + Cable Loss + Reading.
 2. If the average limit is met when using a quasi-peak detector the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.



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Data: 3 File: D:\test data\REPORT\IC1M1212XXX\IC1M1212198-C-D.EM6 (12)



Site no. : No.7 Shielded Room Data no. : 3
 Dis. / Ant. : ENV4200 Ant. pol. : LINE
 Limit : FCC 15B-B
 Env. / Ins. : 25°C / 52% ESCI (1276) Engineer : Fate
 EUT : HSBUB-SDS
 Power Rating : 120Vac/60Hz
 Test Mode : Operating

	Freq. (MHz)	AMN. Factor (dB)	Cable Loss (dB)	Emission Reading (dBμV)	Emission Level (dBμV)	Limits (dBμV)	Margin (dB)	Remark
1	0.15	10.22	9.92	25.10	45.24	55.91	10.67	Average
2	0.15	10.22	9.92	36.25	56.39	65.91	9.52	QP
3	0.19	10.24	9.93	22.73	42.90	53.93	11.03	Average
4	0.19	10.24	9.93	38.38	58.55	63.93	5.38	QP
5	0.26	10.23	9.95	14.65	34.83	51.56	16.73	Average
6	0.26	10.23	9.95	33.06	53.24	61.56	8.32	QP
7	0.33	10.21	9.96	15.50	35.67	49.57	13.90	Average
8	0.33	10.21	9.96	28.65	48.82	59.57	10.75	QP
9	0.67	10.19	9.99	5.06	25.24	46.00	20.76	Average
10	0.67	10.19	9.99	18.76	38.94	56.00	17.06	QP
11	1.15	10.18	10.00	5.19	25.37	46.00	20.63	Average
12	1.15	10.18	10.00	12.71	32.89	56.00	23.11	QP

Remarks: 1. Emission Level= AMN Factor + Cable Loss + Reading.
 2. If the average limit is met when using a quasi-peak detector the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.

3. RADIATED EMISSION MEASUREMENT

3.1. Test Equipment

The following test equipment was used during the radiated emission measurement:

3.1.1.For Frequency Range 30MHz~1000MHz (at Semi-Anechoic Chamber)

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	E4446A	US44300366	Aug. 08, 12'	Aug. 06, 13'
2.	Test Receiver	R & S	ESCS30	100338	Jul. 04, 12'	Jul. 03, 13'
3.	Amplifier	HP	8447D	2944A06305	Feb. 13, 12'	Feb. 12, 13'
4.	Biconical Antenna	CHASE	VBA6106A	1264	Mar. 03, 12'	Mar. 02, 13'
5.	Log Periodic Antenna	Schwarzbeck	UHALP9108-A	0810	Mar. 03, 12'	Mar. 02, 13'

3.1.2.For Frequency Above 1GHz (at Semi-Anechoic Chamber)

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	E4446A	US44300366	Aug. 07, 12'	Aug. 06, 13'
2.	Test Receiver	R & S	ESCS30	100338	Jul. 04, 12'	Jul. 03, 13'
3.	Pre-Amplifier	HP	8449B	3008A02678	Mar. 07, 12'	Mar. 06, 13'
4.	2.4GHz Notch Filter	EWT	EWT-14-0070-R1	G2	Feb. 14, 12'	Feb. 13, 13'
5.	3.5G High Pass Filter	HP	84300-80038	005	Dec. 14, 12'	Dec. 13, 13'
6.	5G High Pass Filter	Microwave Circuits	H1G013G1	459777	Dec. 13, 12'	Dec. 12, 13'
7.	5G Notch Filter	Microwave Circuits	N0555983	459481	Dec. 31, 12'	Dec. 30, 13'
8.	5G Notch Filter	Microwave Circuits	N0258771	459776	Jan. 03, 13'	Jan. 02, 14'
9.	Horn Antenna	EMCO	3115	9112-3775	May 09, 12'	May 08, 13'
10.	Horn Antenna	EMCO	3116	2653	Oct. 15, 12'	Oct. 14, 13'

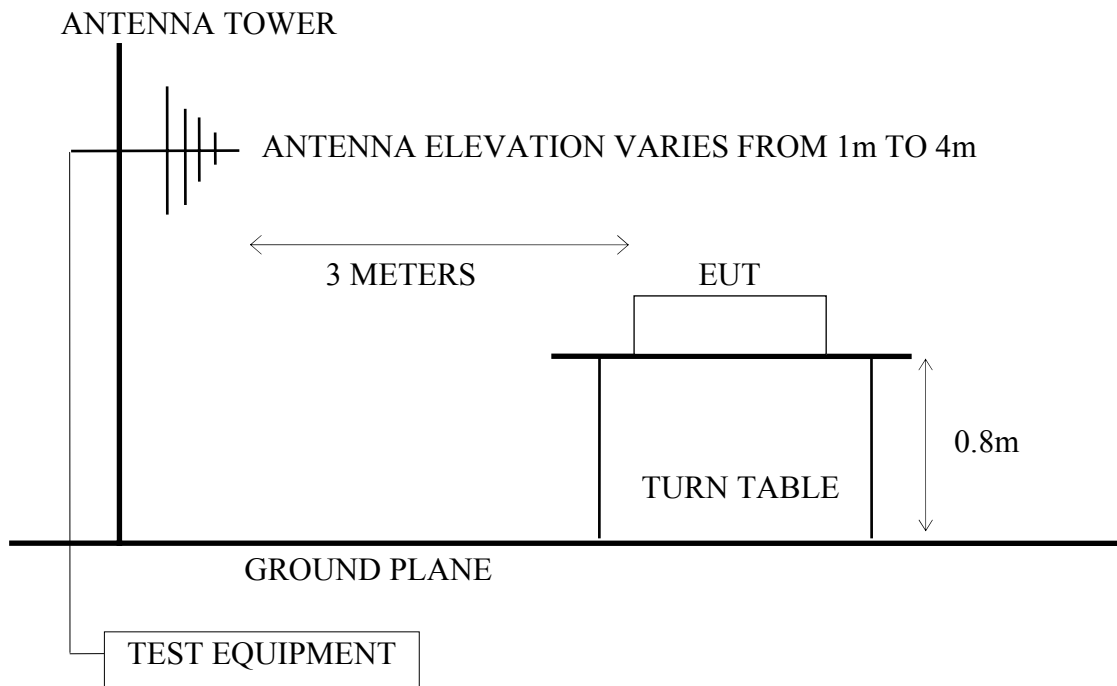
3.2. Test Setup

3.2.1.Block Diagram of connection between EUT and simulators

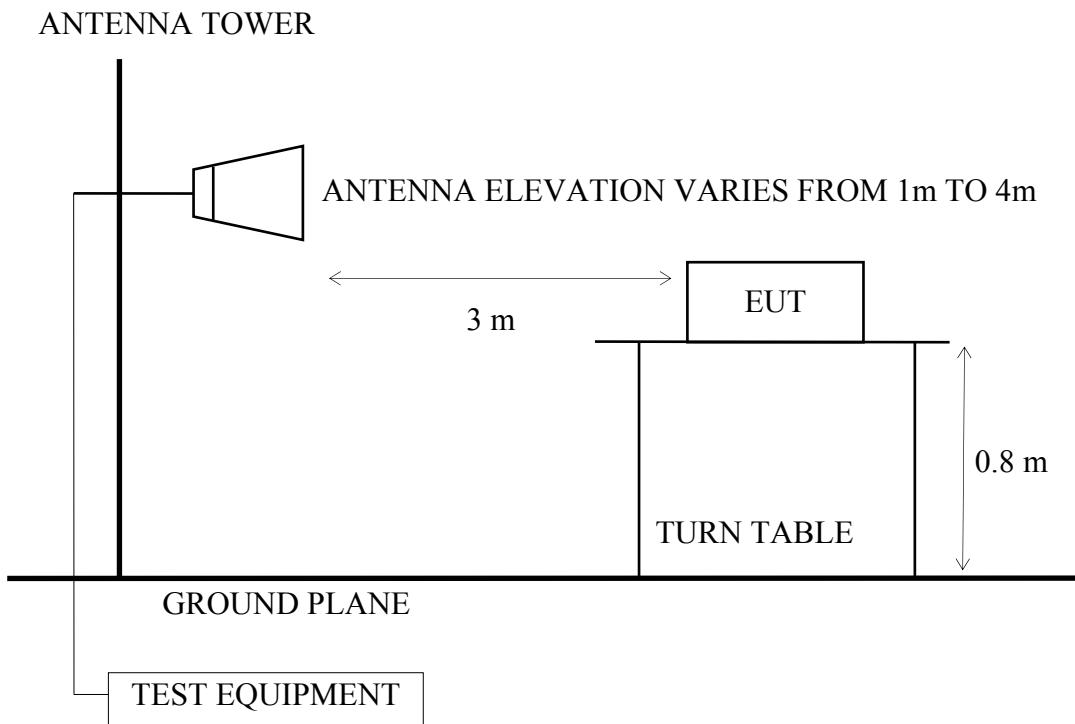


 : AC Adapter

3.2.2.Semi-Anechoic Chamber (3m) Setup Diagram for 30-1000MHz



3.2.3.Semi-Anechoic Chamber (3m) Setup Diagram for above 1GHz



3.3. Radiated Emission Limits (§15.209, RSS-210 §2.7/Table 2)

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMITS	
		$\mu\text{V/m}$	$\text{dB}\mu\text{V/m}$
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
Above 960	3	500	54.0
Above 1000	3	74.0 $\text{dB}\mu\text{V/m}$ (Peak) 54.0 $\text{dB}\mu\text{V/m}$ (Average)	

- Remark :
- (1) Emission level ($\text{dB}\mu\text{V/m}$) = 20 log Emission level ($\mu\text{V/m}$)
 - (2) The tighter limit applies at the edge between two frequency bands.
 - (3) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
 - (4) The limits in this table are based on CFR 47 Part 15.205(a)(b) and Part 15.209 (a).
 - (5) The over 1GHz limit, FCC limit is used based on CFR 47 Part 15.35(b) and Part 15.205(b) & Part 15.209(e) and Part 15.207(c).

3.4. Operating Condition of EUT

- 3.4.1. Set up the EUT (Notebook) via Notebook PC and simulator as shown on 3.2.
- 3.4.2. To turn on the power of all equipments.
- 3.4.3. The EUT was using test program “WL command”.
- 3.4.4. The EUT supports 802.11b/g/n-HT20/n-HT40 modes, we performed pre-scan high, middle, low channels for each mode for spurious emission and listed the worst channel of each mode in test report.

The worst channel of each mode as following:

Mode	Type of Network	Channel
1.	DTS 802.11b (2.4GHz)	CH 11
2.	DTS 802.11g (2.4GHz)	CH 6
3.	DTS 802.11a (5.8GHz)	CH 149
4.	DTS 802.11n-HT20 (2.4GHz)	CH 6
5.	DTS 802.11n-HT20 (5.8GHz)	CH 149
6.	DTS 802.11n-HT40 (5.8GHz)	CH 151

3.5. Test Procedure

The EUT and its simulators were placed on a turn table which was 0.8 meter above the ground. The turn table rotated 360 degrees to determine the position of the maximum emission level. EUT was set 3 meters away from the receiving antenna which was mounted on an antenna tower. The antenna moved up and down between 1 to 4 meters to find out the maximum emission level. Broadband antenna such as calibrated biconical and log-periodical antenna or horn antenna were used as a receiving antenna. Both horizontal and vertical polarization of the antenna were set on measurement. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.4-2003, RSS-Gen and RSS-210 regulation.

The bandwidth of the R&S Test Receiver was set at 120kHz. (For 30MHz to 1000MHz)

The resolution bandwidth and video bandwidth of test spectrum analyzer is 1MHz for peak detection (PK) at frequency above 1GHz.

The resolution bandwidth of test spectrum analyzer is 1MHz and the video bandwidth is 10Hz for average detection (AV) at frequency above 1GHz.

The frequency range from 30MHz to 25GHz (Up to 10th harmonics from fundamental frequency) was checked. 30MHz to 1000MHz was measured with Quasi-Peak detector.

The frequency range from 30MHz to 40GHz (Up to 10th harmonics from fundamental frequency) was checked. 30MHz to 1000MHz was measured with Quasi-Peak detector.

Above 1GHz was measured with peak detector. For frequency from 2.68GHz to 40GHz, we checked it in 1 meter distance and with a shorter cable 2 meter instead of original's. There is no signal exist.

Pursuant to ANSI C63.4 8.3.1.2, when peak value complies with the average limit, we didn't perform measurement in average detector.

3.6. Test Results

PASSED.

(All emissions not reported for there is no emission be found.)

EUT: Notebook M/N: HSBUB-SDS

Test Date: Feb. 01, 2013 Temperature: 26 Humidity: 61%

For Frequency Range 30MHz~1000MHz:

The EUT with following test modes were performed during this section testing and all the test results are listed in section 3.6.1.

Mode	Type of Network	Channel	Frequency	Test Mode	Reference Test Data	
					Horizontal	Vertical
1.	802.11b (2.4GHz)	CH 11	2462MHz	Transmit	# 2	# 1
2.	802.11g (2.4GHz)	CH 6	2437MHz		# 2	# 1
3.	802.11a (5.8GHz)	CH 157	5785MHz		# 2	# 1
4.	802.11n-HT20 (2.4GHz)	CH 6	2437MHz		# 2	# 1
5.	802.11n-HT20 (5.8GHz)	CH 149	5745MHz		# 2	# 1
6.	802.11n-HT40 (2.4GHz)	CH 6	2437MHz		# 2	# 1
7.	802.11n-HT40 (5.8GHz)	CH 151	5755MHz		# 2	# 1
8.	Low Energy	CH 0	2402MHz	Transmit	# 2	# 1
9.	Low Energy	CH 19	2440MHz		# 2	# 1
10.	Low Energy	CH 39	2480MHz		# 2	# 1

* Above all final readings were measured with Quasi-Peak detector.

2.4GHz & 5.8GHz for Frequency above 1GHz:

The EUT with following test modes was performed during this section testing and all the test results are listed in section 3.6.2.

Mode	Type of Network	Channel	Frequency	Test Mode	Reference Test Data			
					Horizontal		Vertical	
					Peak	Average	Peak	Average
1.	802.11b (2.4GHz)	CH 11	2462MHz	Transmit	# 5	# 17	# 6	--(Note2)
2.	802.11g (2.4GHz)	CH 6	2437MHz		# 5	# 15	--(Note3)	--(Note2)
3.	802.11a (5.8GHz)	CH 157	5785MHz		# 5	--(Note2)	# 6	--(Note2)
4.	802.11n-HT20 (2.4GHz)	CH 6	2437MHz		# 5	# 15	# 6	--(Note2)
5.	802.11n-HT20 (5.8GHz)	CH 149	5745MHz		# 5	# 17	# 6	--(Note2)
6.	802.11n-HT40 (2.4GHz)	CH 6	2437MHz		# 5	--(Note2)	# 17	--(Note2)
7.	802.11n-HT40 (5.8GHz)	CH 151	5755MHz		# 5	--(Note2)	# 6	# 17
8.	Low Energy	CH 0	2402MHz	Transmit	# 7	--(Note2)	# 5	--(Note2)
9.	Low Energy	CH 19	2440MHz		# 6	--(Note2)	# 5	--(Note2)
10.	Low Energy	CH 39	2480MHz		# 7	--(Note2)	# 5	--(Note2)

Note: 1. Above all final readings were measured with Peak and Average detector.

2. For measurements above 1GHz to 2.68GHz, the peak measured value complies with the average limit, it is unnecessary to perform an average measurement. (According to ANSI C63.4-2003 section 8.3.1.2)

3. There is no signal be found at vertical polarization above 1GHz.

4. The emissions (up to 40GHz) not reported are too low to be measured.

For Restricted Bands:

The EUT was tested in restricted bands and all the test results are listed in section 3.6.4. (The restricted bands defined in part 15.205(a))

Mode	Type of Network	Channel	Frequency	Test Mode	Reference Test Data	
					Horizontal	Vertical
1.	802.11b (2.4GHz)	CH 6	2412MHz	Transmit	# 1, # 2	# 3, # 4
2.		CH 11	2462MHz		# 5, # 6	# 7, # 8
3.	802.11g (2.4GHz)	CH 6	2412MHz	Transmit	# 1, # 2	# 3, # 4
4.		CH 11	2462MHz		# 5, # 6	# 7, # 8
5.	802.11n-HT20 (2.4GHz)	CH 6	2412MHz	Transmit	# 1, # 2	# 3, # 4
6.		CH 11	2462MHz		# 5, # 6	# 7, # 8

3.6.1.For 30-1000MHz Frequency Range Measurement Results

802.11b (2.4GHz), Transmit, Frequency: 2462MHz

Site no. : A/C Chamber Data no. : 2
 Dis. / Ant. : 3m VBA6106A/UHALP9108A Ant. pol. : HORIZONTAL
 Limit : FCC PART-15C
 Env. / Ins. : E4446A 26°C/61% □jianlun_hung
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX2462(802.11b)

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
225.480	21.94	3.30	5.00	30.25	46.00	15.75	Peak
672.400	22.85	6.40	2.32	31.57	46.00	14.43	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

Site no. : A/C Chamber Data no. : 1
 Dis. / Ant. : 3m VBA6106A/UHALP9108A Ant. pol. : VERTICAL
 Limit : FCC PART-15C
 Env. / Ins. : E4446A 26°C/61% □jianlun_hung
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX2462(802.11b)

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
87.240	15.21	2.00	13.55	30.76	40.00	9.24	Peak
959.400	26.38	7.60	5.14	39.13	46.00	6.87	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

802.11g (2.4GHz), Transmit, Frequency: 2437MHz

Site no. : A/C Chamber Data no. : 2
 Dis. / Ant. : 3m VBA6106A/UHALP9108A Ant. pol. : HORIZONTAL
 Limit : FCC PART-15C
 Env. / Ins. : E4446A 26°C/61% □jianlun_hung
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX2437(802.11g)

Freq. (MHz)	Ant. Cable		Emission				Remark
	Factor (dB/m)	Loss (dB)	Reading (dBμV)	Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	
287.580	25.85	3.80	1.42	31.07	46.00	14.93	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

Site no. : A/C Chamber Data no. : 1
 Dis. / Ant. : 3m VBA6106A/UHALP9108A Ant. pol. : VERTICAL
 Limit : FCC PART-15C
 Env. / Ins. : E4446A 26°C/61% □jianlun_hung
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX2437(802.11g)

Freq. (MHz)	Ant. Cable		Emission				Remark
	Factor (dB/m)	Loss (dB)	Reading (dBμV)	Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	
189.840	21.51	2.92	3.72	28.16	43.50	15.34	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

802.11a (5.8GHz), Transmit, Frequency: 5745MHz

Site no. : A/C Chamber Data no. : 2
 Dis. / Ant. : 3m VBA6106A/UHALP9108A Ant. pol. : HORIZONTAL
 Limit : FCC PART-15C
 Env. / Ins. : E4446A 26°C/61% □jianlun_hung
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX5785 (802.11a)

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBµV)	Emission Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Remark
220.890	21.91	3.30	4.17	29.39	46.00	16.61	Peak
337.800	15.09	4.25	5.66	25.00	46.00	21.00	Peak
672.400	22.85	6.40	3.70	32.95	46.00	13.05	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

Site no. : A/C Chamber Data no. : 1
 Dis. / Ant. : 3m VBA6106A/UHALP9108A Ant. pol. : VERTICAL
 Limit : FCC PART-15C
 Env. / Ins. : E4446A 26°C/61% □jianlun_hung
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX5785 (802.11a)

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBµV)	Emission Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Remark
112.890	18.36	2.26	8.86	29.49	43.50	14.02	Peak
959.400	26.38	7.60	2.71	36.70	46.00	9.30	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

802.11n-HT20 (2.4GHz), Transmit, Frequency: 2437MHz

Site no. : A/C Chamber Data no. : 2
 Dis. / Ant. : 3m VBA6106A/UHALP9108A Ant. pol. : HORIZONTAL
 Limit : FCC PART-15C
 Env. / Ins. : E4446A 26°C/61% □jianlun_hung
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX2437(802.11n20)

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
218.730	21.91	3.21	6.23	31.35	46.00	14.65	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

Site no. : A/C Chamber Data no. : 1
 Dis. / Ant. : 3m VBA6106A/UHALP9108A Ant. pol. : VERTICAL
 Limit : FCC PART-15C
 Env. / Ins. : E4446A 26°C/61% □jianlun_hung
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX2437(802.11n20)

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
102.090	17.29	2.10	6.79	26.18	43.50	17.32	Peak
966.400	26.89	7.70	-1.10	33.49	54.00	20.51	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

802.11n-HT20 (5.8GHz), Transmit, Frequency: 5745MHz

Site no. : A/C Chamber Data no. : 2
 Dis. / Ant. : 3m VBA6106A/UHALP9108A Ant. pol. : HORIZONTAL
 Limit : FCC PART-15C
 Env. / Ins. : E4446A 26°C/61% □jianlun_hung
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX5745 (802.11n20)

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
266.790	24.74	3.70	0.42	28.86	46.00	17.14	Peak
672.400	22.85	6.40	2.67	31.92	46.00	14.08	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

Site no. : A/C Chamber Data no. : 1
 Dis. / Ant. : 3m VBA6106A/UHALP9108A Ant. pol. : VERTICAL
 Limit : FCC PART-15C
 Env. / Ins. : E4446A 26°C/61% □jianlun_hung
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX5745 (802.11n20)

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
115.590	18.69	2.30	9.23	30.22	43.50	13.28	Peak
481.300	18.74	6.10	5.09	29.93	46.00	16.07	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

802.11n-HT40 (2.4GHz), Transmit, Frequency: 2437MHz

Site no. : A/C Chamber Data no. : 2
 Dis. / Ant. : 3m VBA6106A/UHALP9108A Ant. pol. : HORIZONTAL
 Limit : FCC PART-15C
 Env. / Ins. : E4446A 26°C/61% □jianlun_hung
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX2437(802.11n40)

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission			Remark
				Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	
102.090	17.29	2.10	3.36	22.75	43.50	20.75	Peak
512.800	19.95	6.80	2.16	28.91	46.00	17.09	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

Site no. : A/C Chamber Data no. : 1
 Dis. / Ant. : 3m VBA6106A/UHALP9108A Ant. pol. : VERTICAL
 Limit : FCC PART-15C
 Env. / Ins. : E4446A 26°C/61% □jianlun_hung
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX2437(802.11n40)

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission			Remark
				Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	
114.240	18.60	2.30	5.80	26.70	43.50	16.80	Peak
798.400	24.09	6.90	1.55	32.54	46.00	13.46	Peak
959.400	26.38	7.60	2.45	36.44	46.00	9.56	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

802.11n-HT40 (5.8GHz), Transmit, Frequency: 5755MHz

Site no. : A/C Chamber Data no. : 2
 Dis. / Ant. : 3m VBA6106A/UHALP9108A Ant. pol. : HORIZONTAL
 Limit : FCC PART-15C
 Env. / Ins. : E4446A 26°C/61% □jianlun_hung
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX5755 (802.11n40)

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBµV)	Emission			Remark
				Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	
225.480	21.94	3.30	4.51	29.76	46.00	16.24	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

Site no. : A/C Chamber Data no. : 1
 Dis. / Ant. : 3m VBA6106A/UHALP9108A Ant. pol. : VERTICAL
 Limit : FCC PART-15C
 Env. / Ins. : E4446A 26°C/61% □jianlun_hung
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX5755 (802.11n40)

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBµV)	Emission			Remark
				Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	
113.430	18.47	2.26	7.32	28.05	43.50	15.45	Peak
481.300	18.74	6.10	3.27	28.11	46.00	17.89	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

Low Energy, Transmit, Frequency: 2402MHz

Site no. : A/C Chamber Data no. : 2
 Dis. / Ant. : 3m VBA6106A/UHALP9108A Ant. pol. : HORIZONTAL
 Limit : FCC PART-15C
 Env. / Ins. : E4446A 26°C/61% Djianlun_hung
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX2402 (Low Energy)

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission		Margin (dB)	Remark
				Level (dBuV/m)	Limits (dBuV/m)		
192.540	21.66	3.00	4.23	28.89	43.50	14.61	Peak
337.800	15.09	4.25	6.92	26.26	46.00	19.74	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

Site no. : A/C Chamber Data no. : 1
 Dis. / Ant. : 3m VBA6106A/UHALP9108A Ant. pol. : VERTICAL
 Limit : FCC PART-15C
 Env. / Ins. : E4446A 26°C/61% Djianlun_hung
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX2402 (Low Energy)

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission		Margin (dB)	Remark
				Level (dBuV/m)	Limits (dBuV/m)		
93.990	16.37	2.00	13.21	31.58	43.50	11.92	Peak
481.300	18.74	6.10	4.85	29.69	46.00	16.31	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

Low Energy, Transmit, Frequency: 2440MHz

Site no. : A/C Chamber Data no. : 2
 Dis. / Ant. : 3m VBA6106A/UHALP9108A Ant. pol. : HORIZONTAL
 Limit : FCC PART-15C
 Env. / Ins. : E4446A 26°C/61% □jianlun_hung
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX2440 (Low Energy)

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission			Remark
				Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	
108.030	17.87	2.20	5.23	25.30	43.50	18.20	Peak
481.300	18.74	6.10	4.30	29.14	46.00	16.86	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

Site no. : A/C Chamber Data no. : 1
 Dis. / Ant. : 3m VBA6106A/UHALP9108A Ant. pol. : VERTICAL
 Limit : FCC PART-15C
 Env. / Ins. : E4446A 26°C/61% □jianlun_hung
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX2440 (Low Energy)

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission			Remark
				Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	
93.990	16.37	2.00	13.28	31.65	43.50	11.85	Peak
481.300	18.74	6.10	4.00	28.84	46.00	17.16	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

Low Energy, Transmit, Frequency: 2480MHz

Site no. : A/C Chamber Data no. : 2
 Dis. / Ant. : 3m VBA6106A/UHALP9108A Ant. pol. : HORIZONTAL
 Limit : FCC PART-15C
 Env. / Ins. : E4446A 26°C/61% □jianlun_hung
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX2480 (Low Energy)

Freq. (MHz)	Ant. Cable		Reading (dBµV)	Emission			Remark
	Factor (dB/m)	Loss (dB)		Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	
276.780	25.26	3.80	1.61	30.67	46.00	15.33	Peak
672.400	22.85	6.40	1.60	30.85	46.00	15.15	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

Site no. : A/C Chamber Data no. : 1
 Dis. / Ant. : 3m VBA6106A/UHALP9108A Ant. pol. : VERTICAL
 Limit : FCC PART-15C
 Env. / Ins. : E4446A 26°C/61% □jianlun_hung
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX2480 (Low Energy)

Freq. (MHz)	Ant. Cable		Reading (dBµV)	Emission			Remark
	Factor (dB/m)	Loss (dB)		Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	
95.340	16.51	2.00	11.32	29.83	43.50	13.67	Peak
481.300	18.74	6.10	4.43	29.27	46.00	16.73	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

3.6.2.2.4GHz & 5.8GHz for Above 1GHz Frequency Range Measurement Results

802.11b (2.4GHz) Transmit, Frequency: 2462MHz

Site no. : A/C Chamber Data no. : 5
 Dis. / Ant. : 3m 3115(4927) Ant. pol. : HORIZONTAL
 Limit : FCC PART-15C (1G-PK)
 Env. / Ins. : E4446A 26°C/61% □jianlun_hung
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX2462(802.11b)

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
2641.360	29.21	6.69	19.07	54.97	74.00	19.03	Peak
4873.000	33.18	9.15	10.89	53.22	54.00	0.78	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

Site no. : A/C Chamber Data no. : 6
 Dis. / Ant. : 3m 3115(4927) Ant. pol. : VERTICAL
 Limit : FCC PART-15C (1G-AV)
 Env. / Ins. : E4446A 26°C/61% □jianlun_hung
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX2462(802.11b)

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
2641.360	29.21	6.69	16.56	52.46	54.00	1.54	Peak
4873.000	33.18	9.15	9.56	51.89	54.00	2.11	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

802.11b (2.4GHz) Transmit, Frequency: 2462MHz

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Site no.       : A/C Chamber                Data no.  : 17
Dis. / Ant.   : 3m  3115(4927)            Ant. pol. : HORIZONTAL
Limit        : FCC PART-15C (1G-AV)
Env. / Ins.   : E4446A 26°C/61%          □jianlun_hung
EUT          : HSBUB-SDS
Power Rating  : AC120 / 60Hz
Test Mode    : TX2462 (802.11b)

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Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBµV)	Emission			Remark
				Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	
2641.360	29.21	6.69	10.07	45.97	54.00	8.03	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

DTS 802.11g (2.4GHz), Transmit, Frequency: 2437MHz

Site no. : A/C Chamber Data no. : 5
 Dis. / Ant. : 3m 3115(4927) Ant. pol. : HORIZONTAL
 Limit : FCC PART-15C (1G-PK)
 Env. / Ins. : E4446A 26°C/61% □jianlun_hung
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX2437(802.11g)

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
2644.720	29.21	6.71	20.12	56.04	74.00	17.96	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

Site no. : A/C Chamber Data no. : 15
 Dis. / Ant. : 3m 3115(4927) Ant. pol. : HORIZONTAL
 Limit : FCC PART-15C (1G-AV)
 Env. / Ins. : E4446A 26°C/61% □jianlun_hung
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX2437(802.11g)

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
2644.720	29.21	6.71	8.12	44.04	54.00	9.96	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

802.11a (5.8GHz), Transmit, Frequency: 5785MHz

Site no. : A/C Chamber Data no. : 5
 Dis. / Ant. : 3m 3115(4927) Ant. pol. : HORIZONTAL
 Limit : FCC PART-15C (1G-AV)
 Env. / Ins. : E4446A 26°C/61% □jianlun_hung
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX5785(802.11a)

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission			Remark
				Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	
1594.720	26.08	6.12	12.22	44.43	54.00	9.57	Peak
5357.000	33.96	9.62	7.51	51.09	54.00	2.91	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

Site no. : A/C Chamber Data no. : 6
 Dis. / Ant. : 3m 3115(4927) Ant. pol. : VERTICAL
 Limit : FCC PART-15C (1G-AV)
 Env. / Ins. : E4446A 26°C/61% □jianlun_hung
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX5785(802.11a)

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission			Remark
				Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	
1594.720	26.08	6.12	14.73	46.94	54.00	7.06	Peak
5561.000	34.22	9.82	7.78	51.82	54.00	2.18	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

802.11n-HT20 (2.4GHz), Transmit, Frequency: 2437MHz

Site no. : A/C Chamber Data no. : 5
 Dis. / Ant. : 3m 3115(4927) Ant. pol. : HORIZONTAL
 Limit : FCC PART-15C (1G-PK)
 Env. / Ins. : E4446A 26°C/61% □jianlun_hung
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX2437(802.11n20)

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
2636.320	29.15	6.69	21.62	57.47	74.00	16.53	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

Site no. : A/C Chamber Data no. : 6
 Dis. / Ant. : 3m 3115(4927) Ant. pol. : VERTICAL
 Limit : FCC PART-15C (1G-AV)
 Env. / Ins. : E4446A 26°C/61% □jianlun_hung
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX2437(802.11n20)

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
2636.320	29.15	6.69	15.27	51.12	54.00	2.88	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

802.11n-HT20 (2.4GHz), Transmit, Frequency: 2437MHz

Site no. : A/C Chamber Data no. : 15
Dis. / Ant. : 3m 3115(4927) Ant. pol. : HORIZONTAL
Limit : FCC PART-15C (1G-AV)
Env. / Ins. : E4446A 26°C/61% □jianlun_hung
EUT : HSBUB-SDS
Power Rating : AC120 / 60Hz
Test Mode : TX2437(802.11n20)

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
2636.320	29.15	6.69	7.62	43.47	54.00	10.53	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

802.11n-HT20 (5.8GHz), Transmit, Frequency: 5745MHz

Site no. : A/C Chamber Data no. : 5
 Dis. / Ant. : 3m 3115(4927) Ant. pol. : HORIZONTAL
 Limit : FCC PART-15C (1G-AV)
 Env. / Ins. : E4446A 26°C/61% □jianlun_hung
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX5745(802.11n20)

Freq. (MHz)	Ant. Cable		Emission				Remark
	Factor (dB/m)	Loss (dB)	Reading (dBμV)	Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	
1599.760	26.08	6.14	10.04	42.25	54.00	11.75	Peak
5567.000	34.23	9.82	10.69	54.74	74.00	19.26	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

Site no. : A/C Chamber Data no. : 6
 Dis. / Ant. : 3m 3115(4927) Ant. pol. : VERTICAL
 Limit : FCC PART-15C (1G-AV)
 Env. / Ins. : E4446A 26°C/61% □jianlun_hung
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX5745(802.11n20)

Freq. (MHz)	Ant. Cable		Emission				Remark
	Factor (dB/m)	Loss (dB)	Reading (dBμV)	Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	
1594.720	26.08	6.12	12.00	44.21	54.00	9.79	Peak
5357.000	33.96	9.62	7.41	50.99	54.00	3.01	Peak
5567.000	34.23	9.82	9.15	53.20	54.00	0.80	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

802.11n-HT20 (5.8GHz), Transmit, Frequency: 5745MHz

Site no. : A/C Chamber
 Dis. / Ant. : 3m 3115(4927)
 Limit : FCC PART-15C (1G-AV)
 Env. / Ins. : E4446A 26°C/61%
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX5745 (802.11n20)

Data no. : 17
 Ant. pol. : HORIZONTAL
 Djianlun_hung

Freq. (MHz)	Ant. Cable		Emission				Remark
	Factor (dB/m)	Loss (dB)	Reading (dBμV)	Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	
5567.000	34.23	9.82	0.69	44.74	54.00	9.26	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

802.11n-HT40 (2.4GHz), Transmit, Frequency: 2437MHz

Site no. : A/C Chamber
 Dis. / Ant. : 3m 3115(4927)
 Limit : FCC PART-15C (1G-AV)
 Env. / Ins. : E4446A 26°C/61%
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX2437(802.11n40)

Data no. : 5
 Ant. pol. : HORIZONTAL
 □jianlun_hung

Freq. (MHz)	Ant. Cable		Emission				Remark
	Factor (dB/m)	Loss (dB)	Reading (dBμV)	Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	
2602.720	29.04	6.63	13.42	49.09	54.00	4.91	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

802.11n-HT40 (5.8GHz), Transmit, Frequency: 5755MHz

Site no. : A/C Chamber Data no. : 5
 Dis. / Ant. : 3m 3115(4927) Ant. pol. : HORIZONTAL
 Limit : FCC PART-15C (1G-AV)
 Env. / Ins. : E4446A 26°C/61% □jianlun_hung
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX5755(802.11n40)

Freq. (MHz)	Ant. Cable		Emission				Remark
	Factor (dB/m)	Loss (dB)	Reading (dBμV)	Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	
1594.720	26.08	6.12	10.73	42.94	54.00	11.06	Peak
5681.000	34.27	9.94	7.38	51.59	54.00	2.41	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

Site no. : A/C Chamber Data no. : 6
 Dis. / Ant. : 3m 3115(4927) Ant. pol. : VERTICAL
 Limit : FCC PART-15C (1G-AV)
 Env. / Ins. : E4446A 26°C/61% □jianlun_hung
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX5755(802.11n40)

Freq. (MHz)	Ant. Cable		Emission				Remark
	Factor (dB/m)	Loss (dB)	Reading (dBμV)	Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	
1594.720	26.08	6.12	14.17	46.38	54.00	7.62	Peak
5681.000	34.27	9.94	9.84	54.05	74.00	19.95	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

802.11n-HT40 (5.8GHz), Transmit, Frequency: 5755MHz

Site no. : A/C Chamber
 Dis. / Ant. : 3m 3115(4927)
 Limit : FCC PART-15C (1G-AV)
 Env. / Ins. : E4446A 26°C/61% □jianlun_hung
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX5755(802.11n40)
 Data no. : 17
 Ant. pol. : VERTICAL

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBµV)	Emission			Remark
				Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	
5681.000	34.27	9.94	-0.16	44.05	54.00	9.95	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

Date of Test : Feb. 01, 2013 Temperature: 26EUT: Notebook Humidity: 61%Test Mode: Transmitting Mode, Frequency: 2402MHz, Low Energy

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading Horizontal (dB μ V)	Emission Level Horizontal (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)
3207.340	30.77	7.36	10.77	48.90	74.00	25.10

Remarks: 1. Emission level=Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.
 3. All final readings of measurement were with Peak values.
 4. The pre-amplifier factor has been subtracted by test program actively.

Emission Frequency (MHz)	Peak Value (dB/m)	Duty Cycle Correction Factor (dB)	Average Value (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
3207.34	48.9	-3.82	45.09	54.00	8.92

Remarks: 1. Duty Cycle Correction Factor = $20\log(\text{cumulative on}/T)$
 $=20\log(0.388\text{ms}/0.602\text{ms})=-3.82$
 2. Average value=Peak value+Duty Cycle Correction Factor
 3. All final readings of measurement were with Average values.
 4. The pre-amplifier factor has been subtracted by test program actively.

Date of Test : Feb. 01, 2013 Temperature: 26

EUT: Notebook Humidity: 61%

Test Mode: Transmitting Mode, Frequency: 2402MHz, Low Energy

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading Vertical (dBμV)	Emission Level Vertical (dBμV/m)	Limits (dBμV/m)	Margin (dB)
1599.760	26.08	6.14	19.56	51.77	74.00	22.23
3207.340	30.77	7.36	10.54	48.67	74.00	25.33

Remarks: 1. Emission level=Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.
 3. All final readings of measurement were with Peak values.
 4. The pre-amplifier factor has been subtracted by test program actively.

Emission Frequency (MHz)	Peak Value (dB/m)	Duty Cycle Correction Factor (dB)	Average Value (dBμV/m)	Limit (dBμV/m)	Margin (dB)
1599.76	51.77	-3.82	47.96	54.00	6.04
3207.34	48.67	-3.82	44.86	54.00	9.15

Remarks: 1. Duty Cycle Correction Factor = $20\log(\text{cumulative on/T})$
 $=20\log(0.388\text{ms}/0.602\text{ms})=-3.82$
 2. Average value=Peak value+Duty Cycle Correction Factor
 3. All final readings of measurement were with Average values.
 4. The pre-amplifier factor has been subtracted by test program actively.

Date of Test : Feb. 01, 2013 Temperature: 26EUT: Notebook Humidity: 61%Test Mode: Transmitting Mode, Frequency: 2442MHz, Low Energy

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading Horizontal (dB μ V)	Emission Level Horizontal (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)
1599.760	26.08	6.14	11.05	43.26	74.00	30.74
3255.280	30.87	7.40	10.66	48.92	74.00	25.08

Remarks: 1. Emission level=Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.
 3. All final readings of measurement were with Peak values.
 4. The pre-amplifier factor has been subtracted by test program actively.

Emission Frequency (MHz)	Peak Value (dB/m)	Duty Cycle Correction Factor (dB)	Average Value (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
1599.76	43.26	-3.82	39.45	54.00	14.56
3255.28	48.92	-3.82	45.11	54.00	8.90

Remarks: 1. Duty Cycle Correction Factor = $20\log(\text{cumulative on}/T)$
 $=20\log(0.388\text{ms}/0.602\text{ms})=-3.82$
 2. Average value=Peak value+Duty Cycle Correction Factor
 3. All final readings of measurement were with Average values.
 4. The pre-amplifier factor has been subtracted by test program actively.

Date of Test : Feb. 01, 2013 Temperature: 26EUT: Notebook Humidity: 61%Test Mode: Transmitting Mode, Frequency: 2442MHz, Low Energy

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading Vertical (dB μ V)	Emission Level Vertical (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)
1594.720	26.08	6.12	16.50	48.71	74.00	25.29
3255.280	30.87	7.40	9.29	47.55	74.00	26.45

Remarks: 1. Emission level=Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.
 3. All final readings of measurement were with Peak values.
 4. The pre-amplifier factor has been subtracted by test program actively.

Emission Frequency (MHz)	Peak Value (dB/m)	Duty Cycle Correction Factor (dB)	Average Value (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
1594.72	48.71	-3.82	44.90	54.00	9.11
3255.28	47.55	-3.82	43.74	54.00	10.27

Remarks: 1. Duty Cycle Correction Factor = $20\log(\text{cumulative on/T})$
 $=20\log(0.388\text{ms}/0.602\text{ms})=-3.82$
 2. Average value=Peak value+Duty Cycle Correction Factor
 3. All final readings of measurement were with Average values.
 4. The pre-amplifier factor has been subtracted by test program actively.

Date of Test : Feb. 01, 2013 Temperature: 26

EUT: Notebook Humidity: 61%

Test Mode: Transmitting Mode, Frequency: 2480MHz, Low Energy

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading Horizontal (dBμV)	Emission Level Horizontal (dBμV/m)	Limits (dBμV/m)	Margin (dB)
3311.680	30.96	7.49	11.42	49.86	74.00	24.14

Remarks: 1. Emission level=Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.
 3. All final readings of measurement were with Peak values.
 4. The pre-amplifier factor has been subtracted by test program actively.

Emission Frequency (MHz)	Peak Value (dB/m)	Duty Cycle Correction Factor (dB)	Average Value (dBμV/m)	Limit (dBμV/m)	Margin (dB)
3311.68	49.86	-3.82	46.05	54.00	7.96

Remarks: 1. Duty Cycle Correction Factor = $20\log(\text{cumulative on}/T)$
 $=20\log(0.388\text{ms}/0.602\text{ms})=-3.82$
 2. Average value=Peak value+Duty Cycle Correction Factor
 3. All final readings of measurement were with Average values.
 4. The pre-amplifier factor has been subtracted by test program actively.

Date of Test : Feb. 01, 2013 Temperature: 26

EUT: Notebook Humidity: 61%

Test Mode: Transmitting Mode, Frequency: 2480MHz, Low Energy

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading Vertical (dBμV)	Emission Level Vertical (dBμV/m)	Limits (dBμV/m)	Margin (dB)
1599.760	26.08	6.14	13.03	45.24	74.00	28.76

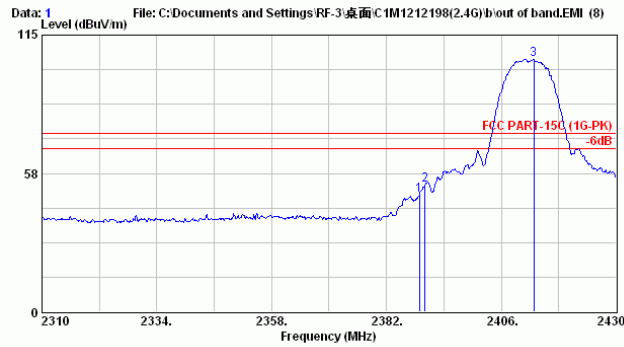
Remarks: 1. Emission level=Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.
 3. All final readings of measurement were with Peak values.
 4. The pre-amplifier factor has been subtracted by test program actively.

Emission Frequency (MHz)	Peak Value (dB/m)	Duty Cycle Correction Factor (dB)	Average Value (dBμV/m)	Limit (dBμV/m)	Margin (dB)
1599.76	45.24	-3.82	41.43	54.00	12.58

Remarks: 1. Duty Cycle Correction Factor = $20\log(\text{cumulative on/T})$
 $=20\log(0.388\text{ms}/0.602\text{ms})=-3.82$
 2. Average value=Peak value+Duty Cycle Correction Factor
 3. All final readings of measurement were with Average values.
 4. The pre-amplifier factor has been subtracted by test program actively.

3.6.3.Restricted Bands Measurement Results

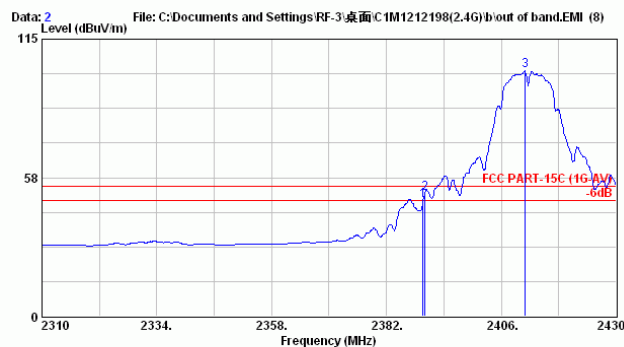
Date of Test : Feb. 01, 2013 Temperature: 26
 EUT: Notebook Humidity: 61%
 Test Mode: 802.11b (2.4GHz), Transmit, Channel: 01, Frequency: 2412MHz



Site no. : A/C Chamber Data no. : 1
 Dis. / Ant. : 3m 3115(4927) Ant. pol. : HORIZONTAL
 Limit : FCC PART-15C (1G-PK)
 Env. / Ins. : E4446A 26°C/61% Djianlun_hung
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX2412(802.11b)

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1 2388.840	28.47	6.34	13.72	48.54	74.00	25.46	Peak
2 2390.040	28.47	6.34	17.87	52.68	74.00	21.32	Peak
3 2412.840	28.51	6.36	70.16	105.04	74.00	-31.04	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

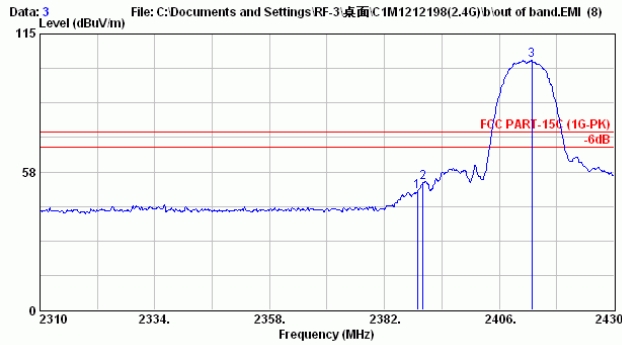


Site no. : A/C Chamber Data no. : 2
 Dis. / Ant. : 3m 3115(4927) Ant. pol. : HORIZONTAL
 Limit : FCC PART-15C (1G-AV)
 Env. / Ins. : E4446A 26°C/61% Djianlun_hung
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX2412(802.11b)

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1 2389.680	28.47	6.34	13.42	48.23	54.00	5.77	Average
2 2390.040	28.47	6.34	16.17	50.98	54.00	3.02	Average
3 2411.040	28.51	6.36	66.89	101.76	54.00	-47.76	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

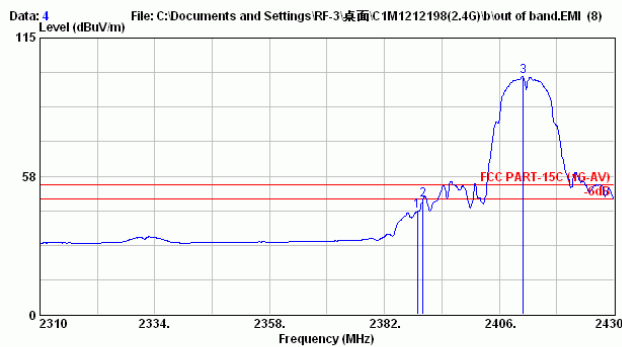
Date of Test : Feb. 01, 2013 Temperature: 26
 EUT: Notebook Humidity: 61%
 Test Mode: 802.11b (2.4GHz), Transmit, Channel: 01, Frequency: 2412MHz



Site no. : A/C Chamber Data no. : 3
 Dis. / Ant. : 3m 3115(4927) Ant. pol. : VERTICAL
 Limit : FCC PART-15C (1G-PK)
 Env. / Ins. : E4446A 26°C/61% Qjianlun_hung
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX2412(802.11b)

	Ant.	Cable	Emission				
Freq.	Factor	Loss	Reading	Level	Limits	Margin	Remark
(MHz)	(dB/m)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1 2388.840	28.47	6.34	14.50	49.32	74.00	24.68	Peak
2 2390.040	28.47	6.34	18.26	53.07	74.00	20.93	Peak
3 2412.840	28.51	6.36	69.10	103.98	74.00	-29.98	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : A/C Chamber Data no. : 4
 Dis. / Ant. : 3m 3115(4927) Ant. pol. : VERTICAL
 Limit : FCC PART-15C (1G-AV)
 Env. / Ins. : E4446A 26°C/61% Qjianlun_hung
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX2412(802.11b)

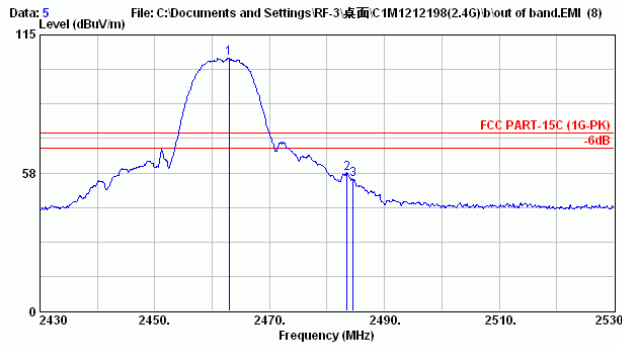
	Ant.	Cable	Emission				
Freq.	Factor	Loss	Reading	Level	Limits	Margin	Remark
(MHz)	(dB/m)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1 2388.840	28.47	6.34	8.18	43.00	54.00	11.00	Average
2 2390.040	28.47	6.34	12.79	47.60	54.00	6.40	Average
3 2411.040	28.51	6.36	64.12	98.99	54.00	-44.99	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

Date of Test : Feb. 01, 2013 Temperature: 26

EUT: Notebook Humidity: 61%

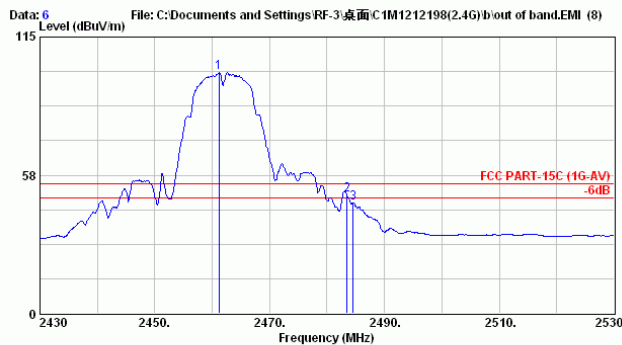
Test Mode: 802.11b (2.4GHz), Transmit, Channel: 11, Frequency: 2462MHz



Site no. : A/C Chamber Data no. : 5
 Dis. / Ant. : 3m 3115(4927) Ant. pol. : HORIZONTAL
 Limit : FCC PART-15C (1G-PK)
 Env. / Ins. : E4446A 26°C/61% □jianlun_hung
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX2462(802.11b)

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1 2462.900	28.62	6.42	70.30	105.34	74.00	-31.34	Peak @
2 2483.500	28.66	6.45	22.36	57.48	74.00	16.52	Peak
3 2484.500	28.66	6.45	19.75	54.86	74.00	19.14	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : A/C Chamber Data no. : 6
 Dis. / Ant. : 3m 3115(4927) Ant. pol. : HORIZONTAL
 Limit : FCC PART-15C (1G-AV)
 Env. / Ins. : E4446A 26°C/61% □jianlun_hung
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX2462(802.11b)

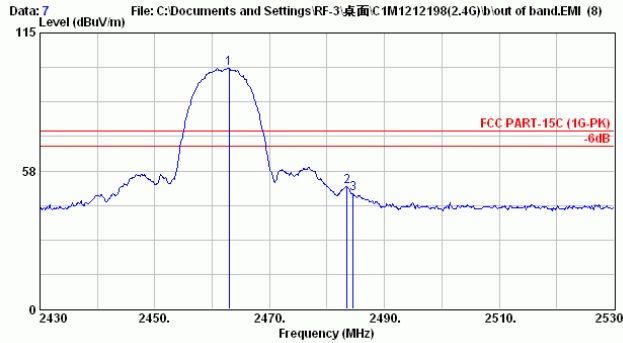
Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1 2461.200	28.62	6.42	65.25	100.30	54.00	-46.30	Average @
2 2483.500	28.66	6.45	14.04	49.15	54.00	4.85	Average !
3 2484.500	28.66	6.45	10.64	45.76	54.00	8.24	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

Date of Test : Feb. 01, 2013 Temperature: 26

EUT: Notebook Humidity: 61%

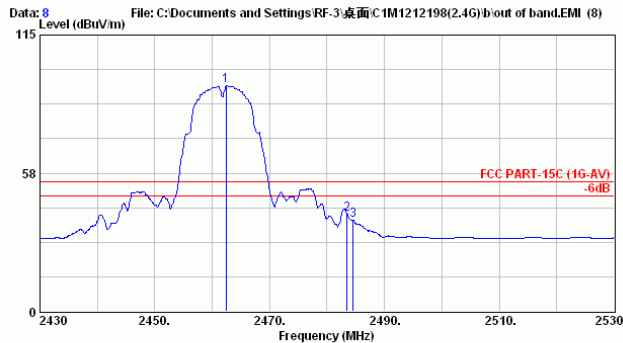
Test Mode: 802.11b (2.4GHz), Transmit, Channel: 11, Frequency: 2462MHz



Site no. : A/C Chamber Data no. : 7
 Dis. / Ant. : 3m 3115(4927) Ant. pol. : VERTICAL
 Limit : FCC PART-15C (1G-PK)
 Env. / Ins. : E4446A 26°C/61% Qjianlun_hung
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX2462(802.11b)

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2462.900	28.62	6.42	65.33	100.37	74.00	-26.37	Peak
2	2483.500	28.66	6.45	15.77	50.88	74.00	23.12	Peak
3	2484.500	28.66	6.45	12.77	47.89	74.00	26.11	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

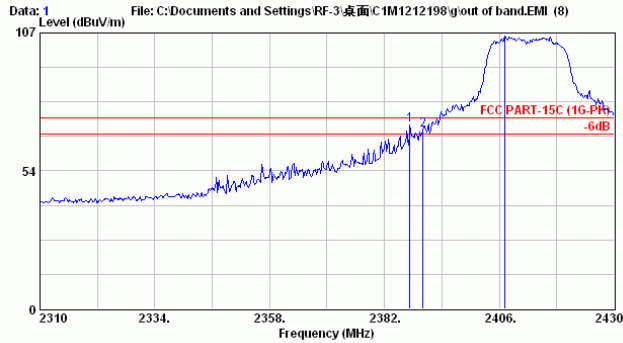


Site no. : A/C Chamber Data no. : 8
 Dis. / Ant. : 3m 3115(4927) Ant. pol. : VERTICAL
 Limit : FCC PART-15C (1G-AV)
 Env. / Ins. : E4446A 26°C/61% Qjianlun_hung
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX2462(802.11b)

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2462.400	28.62	6.42	58.72	93.77	54.00	-39.77	Average
2	2483.500	28.66	6.45	5.43	40.55	54.00	13.45	Average
3	2484.500	28.66	6.45	2.72	37.84	54.00	16.16	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

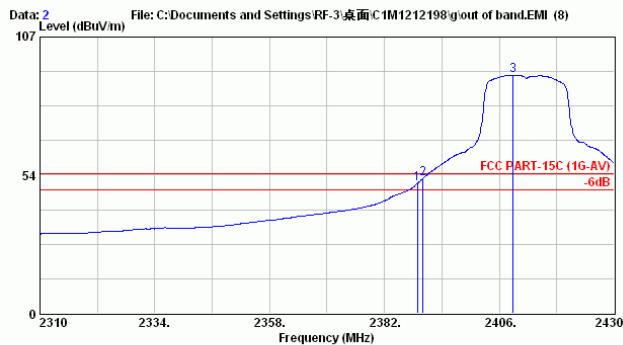
Date of Test : Feb. 01, 2013 Temperature: 26
 EUT: Notebook Humidity: 61%
 Test Mode: 802.11g (2.4GHz), Transmit, Channel: 01, Frequency: 2412MHz



Site no. : A/C Chamber Data no. : 1
 Dis. / Ant. : 3m 3115(4927) Ant. pol. : HORIZONTAL
 Limit : FCC PART-15C (1G-PK)
 Env. / Ins. : E4446A 26°C/61% Qjianlun_hung
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX2412(802.11g)

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission			Remark
				Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	
1 2387.280	28.47	6.33	36.63	71.43	74.00	2.57	Peak 1
2 2390.040	28.47	6.34	34.43	69.24	74.00	4.76	Peak 1
3 2407.080	28.51	6.36	70.82	105.69	74.00	-31.69	Peak 0

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

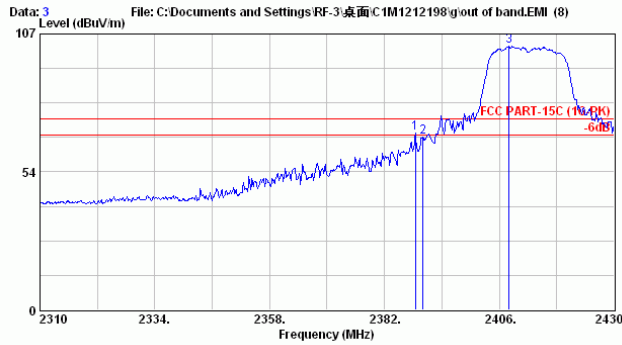


Site no. : A/C Chamber Data no. : 2
 Dis. / Ant. : 3m 3115(4927) Ant. pol. : HORIZONTAL
 Limit : FCC PART-15C (1G-AV)
 Env. / Ins. : E4446A 26°C/61% Qjianlun_hung
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX2412(802.11g)

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission			Remark
				Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	
1 2388.840	28.47	6.34	15.33	50.15	54.00	3.85	Average 1
2 2390.040	28.47	6.34	17.28	52.09	54.00	1.91	Average 1
3 2408.880	28.51	6.36	57.33	92.20	54.00	-38.20	Average 0

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

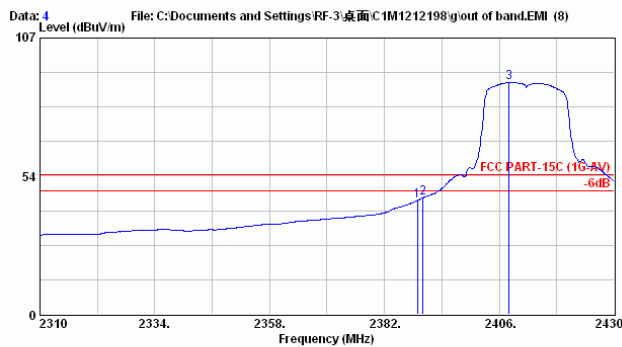
Date of Test : Feb. 01, 2013 Temperature: 26
 EUT: Notebook Humidity: 61%
 Test Mode: 802.11g (2.4GHz), Transmit, Channel: 01, Frequency: 2412MHz



Site no. : A/C Chamber Data no. : 3
 Dis. / Ant. : 3m 3115(4927) Ant. pol. : VERTICAL
 Limit : FCC PART-15C (1G-PK)
 Env. / Ins. : E4446A 26°C/61% Djianlun_hung
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX2412(802.11g)

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2388.480	28.47	6.34	33.90	68.72	74.00	5.28	Peak l
2	2390.040	28.47	6.34	32.36	67.17	74.00	6.83	Peak
3	2408.040	28.51	6.36	67.38	102.25	74.00	-28.25	Peak x

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

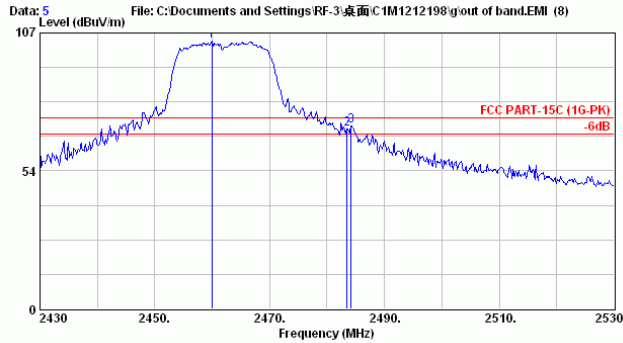


Site no. : A/C Chamber Data no. : 4
 Dis. / Ant. : 3m 3115(4927) Ant. pol. : VERTICAL
 Limit : FCC PART-15C (1G-AV)
 Env. / Ins. : B4446A 26°C/61% Djianlun_hung
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX2412(802.11g)

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2388.840	28.47	6.34	9.23	44.05	54.00	9.95	Average
2	2390.040	28.47	6.34	10.25	45.06	54.00	8.94	Average
3	2408.040	28.51	6.36	54.82	89.69	54.00	-35.69	Average @

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

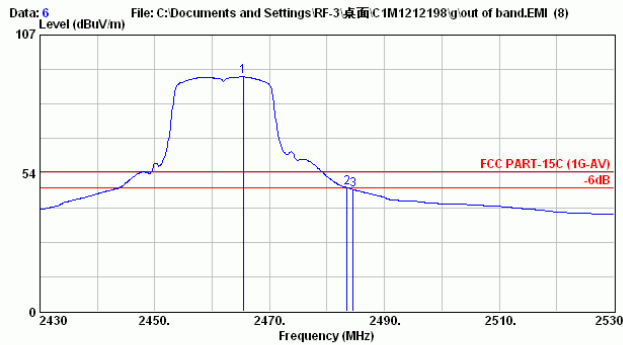
Date of Test : Feb. 01, 2013 Temperature: 26
 EUT: Notebook Humidity: 61%
 Test Mode: 802.11g (2.4GHz), Transmit, Channel: 11, Frequency: 2462MHz



Site no. : A/C Chamber Data no. : 5
 Dis. / Ant. : 3m 3115(4927) Ant. pol. : HORIZONTAL
 Limit : FCC PART-15C (1G-PK)
 Env. / Ins. : E4446A 26°C/61% Qjianlun_hung
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX2462(802.11g)

	Ant. Freq. (MHz)	Factor (dB/m)	Cable Loss (dB)	Emission Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2459.900	28.62	6.42	68.79	103.83	74.00	-29.83	Peak X
2	2483.500	28.66	6.45	34.82	69.93	74.00	4.07	Peak !
3	2484.200	28.66	6.45	35.94	71.06	74.00	2.94	Peak !

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : A/C Chamber Data no. : 6
 Dis. / Ant. : 3m 3115(4927) Ant. pol. : HORIZONTAL
 Limit : FCC PART-15C (1G-AV)
 Env. / Ins. : E4446A 26°C/61% Qjianlun_hung
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX2462(802.11g)

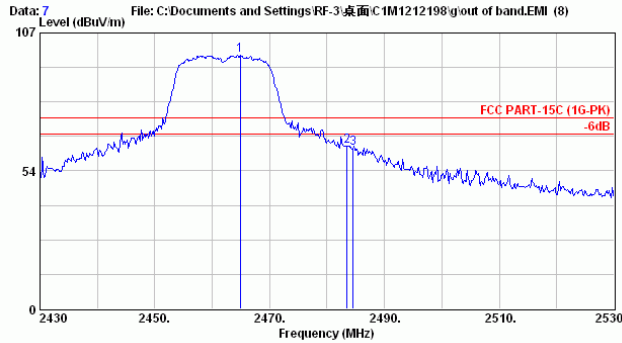
	Ant. Freq. (MHz)	Factor (dB/m)	Cable Loss (dB)	Emission Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2465.400	28.62	6.42	55.73	90.78	54.00	-36.78	Average @
2	2483.500	28.66	6.45	12.75	47.86	54.00	6.14	Average
3	2484.500	28.66	6.45	12.08	47.19	54.00	6.81	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

Date of Test : Feb. 01, 2013 Temperature: 26

EUT: Notebook Humidity: 61%

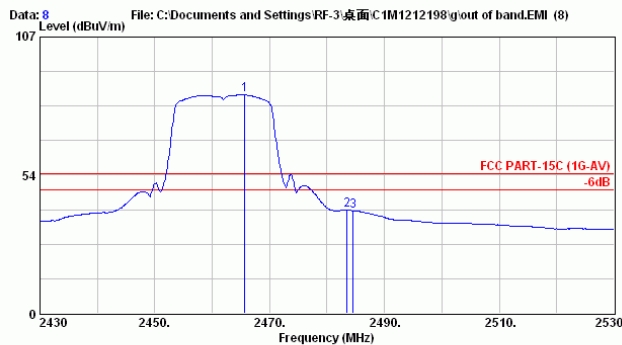
Test Mode: 802.11g (2.4GHz), Transmit, Channel: 11, Frequency: 2462MHz



Site no. : A/C Chamber Data no. : 7
 Dis. / Ant. : 3m 3115(4927) Ant. pol. : VERTICAL
 Limit : FCC PART-15C (1G-PK)
 Env. / Ins. : E4446A 26°C/61% Qjianlun_hung
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX2462(802.11g)

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2464.900	28.62	6.42	63.26	98.31	74.00	-24.31	Peak X
2	2483.500	28.66	6.45	27.95	63.07	74.00	10.93	Peak
3	2484.500	28.66	6.45	27.27	62.38	74.00	11.62	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : A/C Chamber Data no. : 8
 Dis. / Ant. : 3m 3115(4927) Ant. pol. : VERTICAL
 Limit : FCC PART-15C (1G-AV)
 Env. / Ins. : E4446A 26°C/61% Qjianlun_hung
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX2462(802.11g)

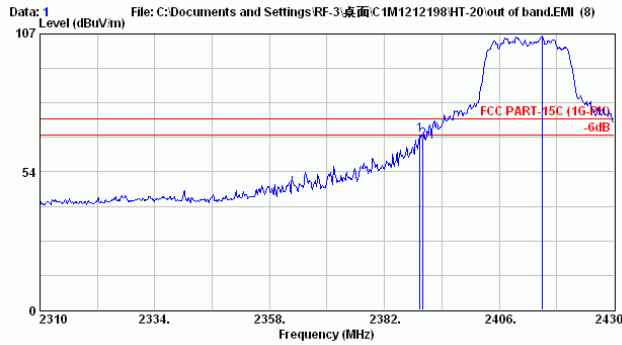
	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2465.700	28.62	6.42	49.53	84.57	54.00	-30.57	Average X
2	2483.500	28.66	6.45	4.84	39.95	54.00	14.05	Average
3	2484.500	28.66	6.45	4.61	39.72	54.00	14.28	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

Date of Test : Feb. 01, 2013 Temperature: 26

EUT: Notebook Humidity: 61%

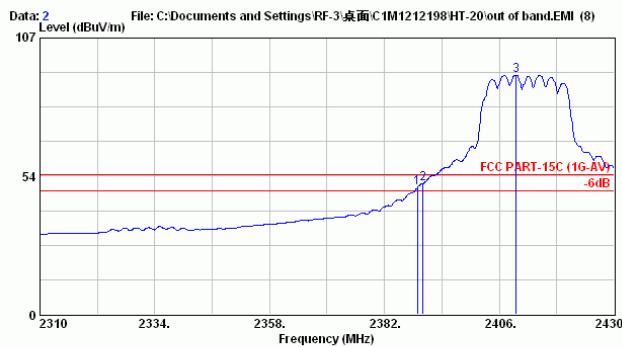
Test Mode: 802.11n-HT20 (2.4GHz), Transmit, Channel: 01, Frequency: 2412MHz



Site no. : A/C Chamber Data no. : 1
 Dis. / Ant. : 3m 3115(4927) Ant. pol. : HORIZONTAL
 Limit : FCC PART-15C (1G-PK)
 Env. / Ins. : E4446A 26°C/61% Qjianlun_hung
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX2412(802.11n20)

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2389.440	28.47	6.34	32.80	67.61	74.00	6.39	Peak
2	2390.040	28.47	6.34	30.98	65.79	74.00	8.21	Peak
3	2414.880	28.51	6.36	71.47	106.34	74.00	-32.34	Peak @

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : A/C Chamber Data no. : 2
 Dis. / Ant. : 3m 3115(4927) Ant. pol. : HORIZONTAL
 Limit : FCC PART-15C (1G-AV)
 Env. / Ins. : B4446A 26°C/61% Qjianlun_hung
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX2412(802.11n20)

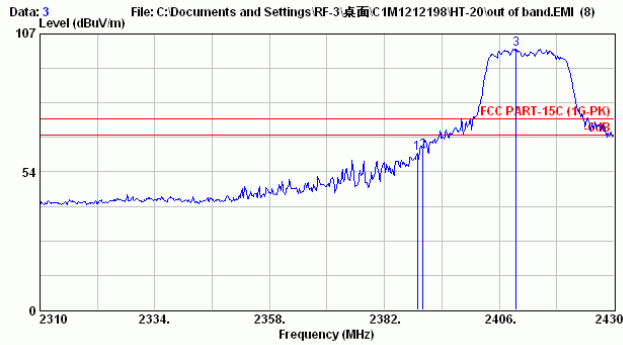
	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2388.840	28.47	6.34	14.09	48.91	54.00	5.09	Average 1
2	2390.040	28.47	6.34	15.82	50.63	54.00	3.37	Average 1
3	2409.480	28.51	6.36	57.81	92.68	54.00	-38.68	Average @

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

Date of Test : Feb. 01, 2013 Temperature: 26

EUT: Notebook Humidity: 61%

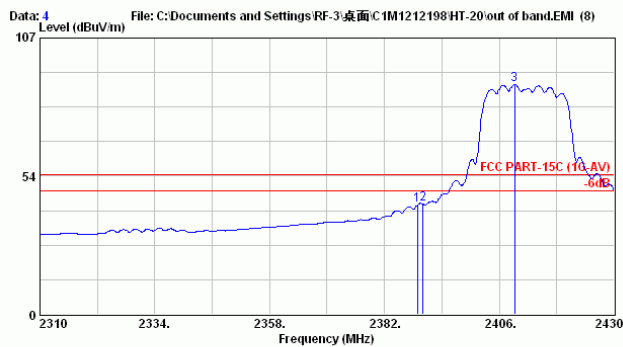
Test Mode: 802.11n-HT20 (2.4GHz), Transmit, Channel: 01, Frequency: 2412MHz



Site no. : A/C Chamber Data no. : 3
 Dis. / Ant. : 3m 3115(4927) Ant. pol. : VERTICAL
 Limit : FCC PART-15C (1G-PK)
 Env. / Ins. : E4446A 26°C/61% Qjianlun_hung
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX2412(802.11n20)

	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2388.840	28.47	6.34	25.75	60.57	74.00	13.43 Peak
2	2390.040	28.47	6.34	26.63	61.44	74.00	12.56 Peak
3	2409.480	28.51	6.36	66.32	101.19	74.00	-27.19 Peak X

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

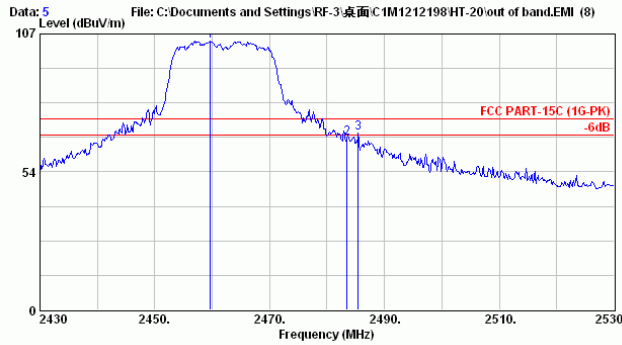


Site no. : A/C Chamber Data no. : 4
 Dis. / Ant. : 3m 3115(4927) Ant. pol. : VERTICAL
 Limit : FCC PART-15C (1G-AV)
 Env. / Ins. : B4446A 26°C/61% Qjianlun_hung
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX2412(802.11n20)

	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2388.840	28.47	6.34	7.47	42.29	54.00	11.71 Average
2	2390.040	28.47	6.34	7.97	42.78	54.00	11.22 Average
3	2409.240	28.51	6.36	53.97	88.84	54.00	-34.84 Average @

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

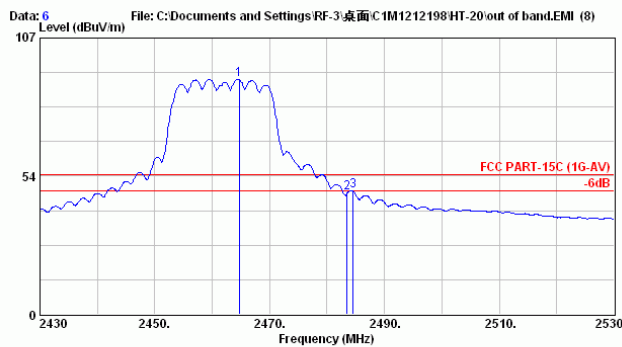
Date of Test : Feb. 01, 2013 Temperature: 26
 EUT: Notebook Humidity: 61%
 Test Mode: 802.11n-HT20 (2.4GHz), Transmit, Channel: 11, Frequency: 2462MHz



Site no. : A/C Chamber Data no. : 5
 Dis. / Ant. : 3m 3115(4927) Ant. pol. : HORIZONTAL
 Limit : FCC PART-15C (1G-PK)
 Env. / Ins. : E4446A 26°C/61% Djianlun_hung
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX2462(802.11n20)

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2459.700	28.62	6.42	69.07	104.11	74.00	-30.11	Peak X
2	2483.500	28.66	6.45	31.50	66.61	74.00	7.39	Peak
3	2485.400	28.66	6.45	33.43	68.54	74.00	5.46	Peak 1

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

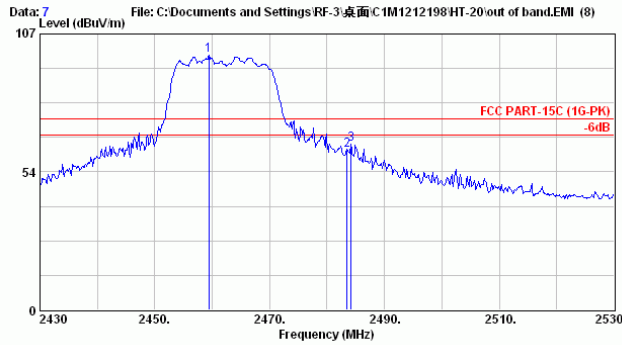


Site no. : A/C Chamber Data no. : 6
 Dis. / Ant. : 3m 3115(4927) Ant. pol. : HORIZONTAL
 Limit : FCC PART-15C (1G-AV)
 Env. / Ins. : B4446A 26°C/61% Djianlun_hung
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX2462(802.11n20)

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2464.700	28.62	6.42	55.92	90.97	54.00	-36.97	Average @
2	2483.500	28.66	6.45	11.87	46.98	54.00	7.02	Average
3	2484.500	28.66	6.45	12.62	47.74	54.00	6.26	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

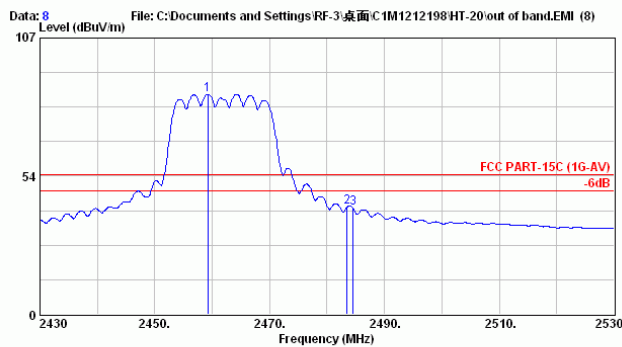
Date of Test : Feb. 01, 2013 Temperature: 26
 EUT: Notebook Humidity: 61%
 Test Mode: 802.11n-HT20 (2.4GHz), Transmit, Channel: 11, Frequency: 2462MHz



Site no. : A/C Chamber Data no. : 7
 Dis. / Ant. : 3m 3115(4927) Ant. pol. : VERTICAL
 Limit : FCC PART-15C (1G-PK)
 Env. / Ins. : E4446A 26°C/61% Qjianlun_hung
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX2462(802.11n20)

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2459.400	28.62	6.42	63.80	98.84	74.00	-24.84	Peak X
2	2483.500	28.66	6.45	26.96	62.07	74.00	11.93	Peak
3	2484.200	28.66	6.45	29.25	64.37	74.00	9.63	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

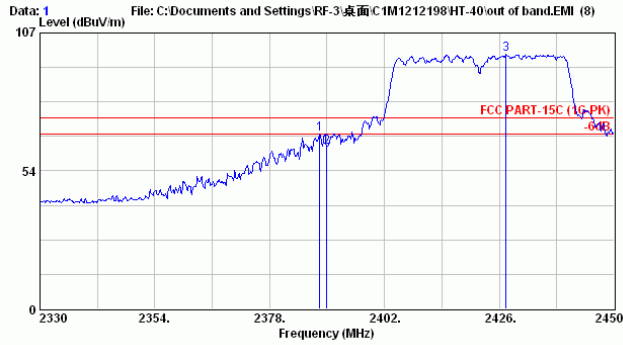


Site no. : A/C Chamber Data no. : 8
 Dis. / Ant. : 3m 3115(4927) Ant. pol. : VERTICAL
 Limit : FCC PART-15C (1G-AV)
 Env. / Ins. : B4446A 26°C/61% Qjianlun_hung
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX2462(802.11n20)

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2459.200	28.62	6.42	50.09	85.13	54.00	-31.13	Average X
2	2483.500	28.66	6.45	6.37	41.48	54.00	12.52	Average
3	2484.500	28.66	6.45	6.05	41.16	54.00	12.84	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

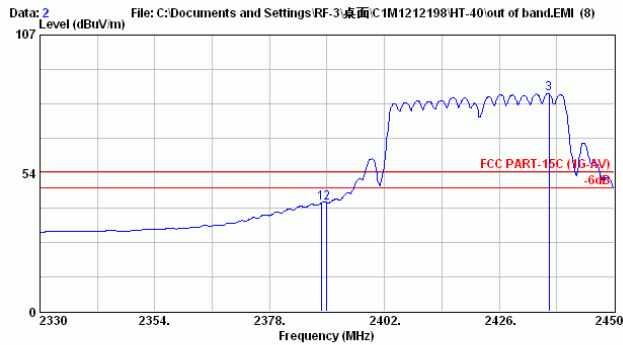
Date of Test : Feb. 01, 2013 Temperature: 26
 EUT: Notebook Humidity: 61%
 Test Mode: 802.11n-HT40 (2.4GHz), Transmit, Channel: 3, Frequency: 2422MHz



Site no. : A/C Chamber Data no. : 1
 Dis. / Ant. : 3m 3115(4927) Ant. pol. : HORIZONTAL
 Limit : FCC PART-15C (1G-PK)
 Env. / Ins. : E4446A 26°C/61% Qjianlun_hung
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX2422(802.11n40)

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission			Remark
				Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	
1 2388.440	28.47	6.34	33.15	67.97	74.00	6.03	Peak
2 2390.000	28.47	6.34	27.93	62.75	74.00	11.25	Peak
3 2427.440	28.55	6.38	63.69	98.62	74.00	-24.62	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

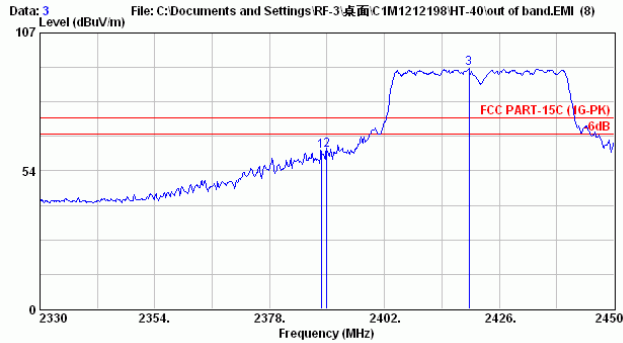


Site no. : A/C Chamber Data no. : 2
 Dis. / Ant. : 3m 3115(4927) Ant. pol. : HORIZONTAL
 Limit : FCC PART-15C (1G-AV)
 Env. / Ins. : E4446A 26°C/61% Qjianlun_hung
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX2422(802.11n40)

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission			Remark
				Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	
1 2388.800	28.47	6.34	7.15	41.96	54.00	12.04	Average
2 2390.000	28.47	6.34	7.29	42.10	54.00	11.90	Average
3 2436.440	28.55	6.39	49.40	84.34	54.00	-30.34	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

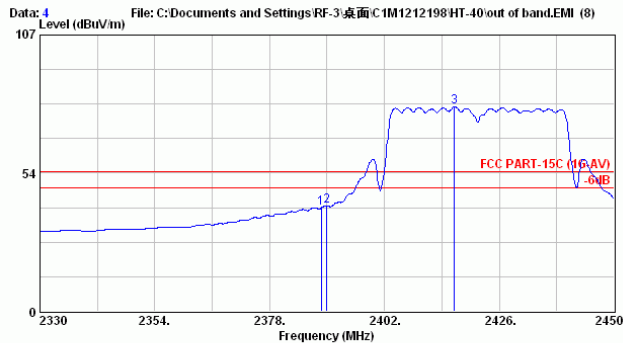
Date of Test : Feb. 01, 2013 Temperature: 26
 EUT: Notebook Humidity: 61%
 Test Mode: 802.11n-HT40 (2.4GHz), Transmit, Channel: 3, Frequency: 2422MHz



Site no. : A/C Chamber Data no. : 3
 Dis. / Ant. : 3m 3115(4927) Ant. pol. : VERTICAL
 Limit : FCC PART-15C (1G-PK)
 Env. / Ins. : E4446A 26°C/61% Qjianlun_hung
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX2422(802.11n40)

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2388.800	28.47	6.34	26.20	61.02	74.00	12.98	Peak
2	2390.000	28.47	6.34	26.87	61.68	74.00	12.32	Peak
3	2419.640	28.55	6.37	58.22	93.14	74.00	-19.14	Peak X

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

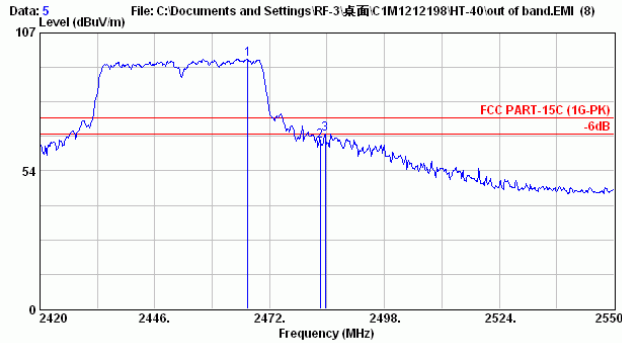


Site no. : A/C Chamber Data no. : 4
 Dis. / Ant. : 3m 3115(4927) Ant. pol. : VERTICAL
 Limit : FCC PART-15C (1G-AV)
 Env. / Ins. : E4446A 26°C/61% Qjianlun_hung
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX2422(802.11n40)

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2388.800	28.47	6.34	5.25	40.06	54.00	13.94	Average
2	2390.000	28.47	6.34	6.05	40.86	54.00	13.14	Average
3	2419.640	28.51	6.37	44.22	79.10	54.00	-25.10	Average 0

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

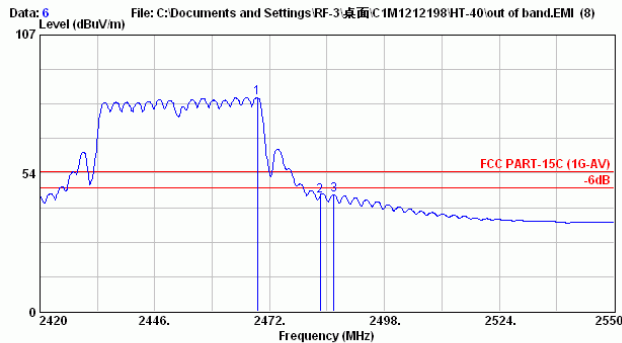
Date of Test : Feb. 01, 2013 Temperature: 26
 EUT: Notebook Humidity: 61%
 Test Mode: 802.11n-HT40 (2.4GHz), Transmit, Channel: 9, Frequency: 2452MHz



Site no. : A/C Chamber Data no. : 5
 Dis. / Ant. : 3m 3115(4927) Ant. pol. : HORIZONTAL
 Limit : FCC PART-15C (1G-PK)
 Env. / Ins. : E4446A 26°C/61% Qjianlun_hung
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX2452(802.11n40)

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2467.060	28.62	6.42	61.88	96.93	74.00	-22.93	Peak
2	2483.500	28.66	6.45	29.87	64.98	74.00	9.02	Peak
3	2484.610	28.66	6.45	32.86	67.98	74.00	6.02	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : A/C Chamber Data no. : 6
 Dis. / Ant. : 3m 3115(4927) Ant. pol. : HORIZONTAL
 Limit : FCC PART-15C (1G-AV)
 Env. / Ins. : E4446A 26°C/61% Qjianlun_hung
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX2452(802.11n40)

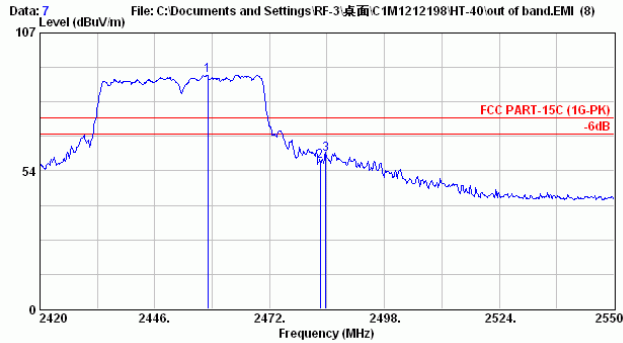
	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2469.270	28.62	6.43	47.70	82.76	54.00	-28.76	Average
2	2483.500	28.66	6.45	9.75	44.86	54.00	9.14	Average
3	2486.560	28.66	6.45	10.06	45.17	54.00	8.83	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

Date of Test : Feb. 01, 2013 Temperature: 26

EUT: Notebook Humidity: 61%

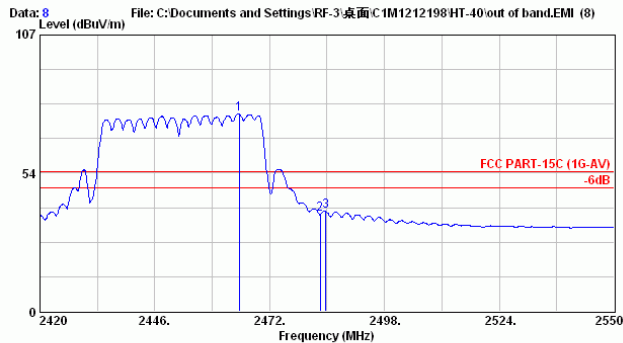
Test Mode: 802.11n-HT40 (2.4GHz), Transmit, Channel: 3, Frequency: 2422MHz



Site no. : A/C Chamber Data no. : 7
 Dis. / Ant. : 3m 3115(4927) Ant. pol. : VERTICAL
 Limit : FCC PART-15C (1G-PK)
 Env. / Ins. : E4446A 26°C/61% Qjianlun_hung
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX2452(802.11n40)

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2457.960	28.62	6.42	55.60	90.65	74.00	-16.65	Peak X
2	2483.500	28.66	6.45	22.12	57.23	74.00	16.77	Peak
3	2484.740	28.66	6.45	25.01	60.13	74.00	13.87	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : A/C Chamber Data no. : 8
 Dis. / Ant. : 3m 3115(4927) Ant. pol. : VERTICAL
 Limit : FCC PART-15C (1G-AV)
 Env. / Ins. : E4446A 26°C/61% Qjianlun_hung
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX2452(802.11n40)

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2465.110	28.62	6.42	41.25	76.30	54.00	-22.30	Average @
2	2483.500	28.66	6.45	2.36	37.47	54.00	16.53	Average
3	2484.740	28.66	6.45	3.59	38.70	54.00	15.30	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

Date of Test : Feb. 01, 2013 Temperature: 26

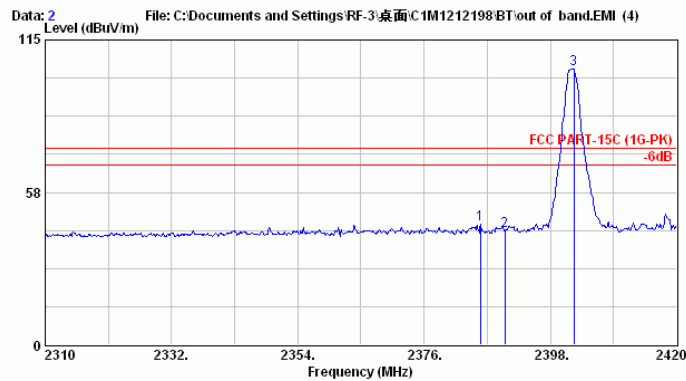
EUT: Notebook Humidity: 61%

Test Mode: Transmit, Channel: 0, Frequency: 2402MHz, Low Energy

	Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading Horizontal (dBμV)	Emission Level Horizontal (dBμV/m)	Limits (dBμV/m)	Margin (dB)
Peak *	2385.790	28.47	6.33	10.55	45.36	74.00	28.64

	Emission Frequency (MHz)	Peak Value (dB/m)	Duty Cycle Correction Factor (dB)	Average Value (dBμV/m)	Limit (dBμV/m)	Margin (dB)
Average *	2385.79	45.36	-3.82	41.55	54.00	12.46

- Remark : 1. Emission Level = Antenna Factor + Cable Loss + Meter Reading.
 2. Low frequency section (spurious in the restricted band 2310-2420MHz).
 3. '*' The field strength of emission appearing within Part 15.205(a) shall not exceed the limits shown in section 15.209.
 4. Duty Cycle Correction Factor = $20\log(\text{cumulative on/T}) = 20\log(0.388\text{ms}/0.602\text{ms}) = -3.82$
 5. The pre-amplifier factor has been subtracted by test program actively.



Site no. : A/C Chamber Data no. : 2
 Dis. / Ant. : 3m 3115(4927) Ant. pol. : HORIZONTAL
 Limit : FCC PART-15C (1G-PK)
 Env. / Ins. : E4446A 26°C/61% Qjianlun_hung
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX2402(Low Energy)

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	2385.790	28.47	6.33	10.55	45.36	74.00	28.64	Peak
2	2390.080	28.47	6.34	8.36	43.17	74.00	30.83	Peak
3	2402.070	28.47	6.36	69.36	104.19	74.00	-30.19	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

Date of Test : Feb. 01, 2013 Temperature: 26

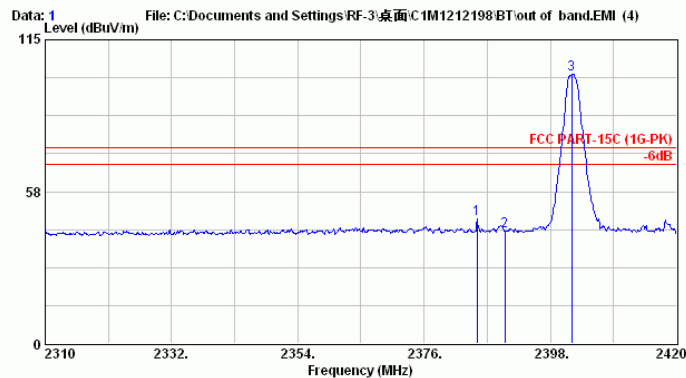
EUT: Notebook Humidity: 61%

Test Mode: Transmit, Channel: 0, Frequency: 2402MHz, Low Energy

	Emission Frequency	Antenna Factor	Cable Loss	Meter Reading Vertical	Emission Level Vertical	Limits	Margin
	(MHz)	(dB/m)	(dB)	(dBμV)	(dBμV/m)	(dBμV/m)	(dB)
Peak *	2385.240	28.43	6.33	12.37	47.14	74.00	26.86

	Emission Frequency	Peak Value	Duty Cycle Correction Factor	Average Value	Limit	Margin
	(MHz)	(dB/m)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
Average *	2385.24	47.14	-3.82	43.33	54.00	10.68

- Remark : 1. Emission Level = Antenna Factor + Cable Loss + Meter Reading.
 2. Low frequency section (spurious in the restricted band 2310-2420MHz).
 3. '*' The field strength of emission appearing within Part 15.205(a) shall not exceed the limits shown in section 15.209.
 4. Duty Cycle Correction Factor = $20\log(\text{cumulative on/T}) = 20\log(0.388\text{ms}/0.602\text{ms}) = -3.82$
 5. The pre-amplifier factor has been subtracted by test program actively.



Site no. : A/C Chamber Data no. : 1
 Dis. / Ant. : 3m 3115(4927) Ant. pol. : VERTICAL
 Limit : FCC PART-15C (1G-PK)
 Env. / Ins. : E4446A 26°C/61% @jianlun_hung
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX2402 (Low Energy)

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	2385.240	28.43	6.33	12.37	47.14	74.00	26.86	Peak
2	2390.090	28.47	6.34	7.89	42.70	74.00	31.30	Peak
3	2401.740	28.47	6.35	67.01	101.83	74.00	-27.83	Peak @

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

Date of Test : Feb. 01, 2013 Temperature: 26

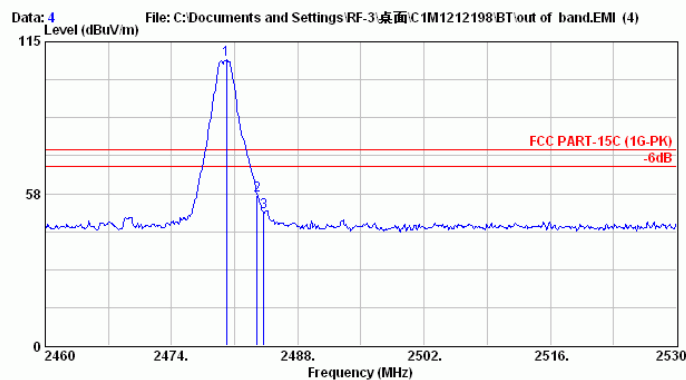
EUT: Notebook Humidity: 61%

Test Mode: Transmit, Channel: 39, Frequency: 2480MHz, Low Energy

	Emission Frequency	Antenna Factor	Cable Loss	Meter Reading Horizontal	Emission Level Horizontal	Limits	Margin
	(MHz)	(dB/m)	(dB)	(dBμV)	(dBμV/m)	(dBμV/m)	(dB)
Peak *	2483.500	28.66	6.45	21.89	57.01	74.00	16.99

	Emission Frequency	Peak Value	Duty Cycle Correction Factor	Average Value	Limit	Margin
	(MHz)	(dB/m)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
Average *	2483.50	57.01	-3.82	53.20	54.00	0.81

- Remark : 1. Emission Level = Antenna Factor + Cable Loss + Meter Reading.
 2. Low frequency section (spurious in the restricted band 2310-2420MHz).
 3. '*' The field strength of emission appearing within Part 15.205(a) shall not exceed the limits shown in section 15.209.
 4. Duty Cycle Correction Factor = $20\log(\text{cumulative on/T}) = 20\log(0.388\text{ms}/0.602\text{ms}) = -3.82$
 5. The pre-amplifier factor has been subtracted by test program actively.



Site no. : A/C Chamber Data no. : 4
 Dis. / Ant. : 3m 3115(4927) Ant. pol. : HORIZONTAL
 Limit : FCC PART-15C (1G-PK)
 Env. / Ins. : E4446A 26°C/61% Djianlun_hung
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX2480 (Low Energy)

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	2480.090	28.66	6.44	72.99	108.09	74.00	-34.09	Peak
2	2483.500	28.66	6.45	21.89	57.01	74.00	16.99	Peak
3	2484.220	28.66	6.45	15.24	50.35	74.00	23.65	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

Date of Test : Feb. 01, 2013 Temperature: 26

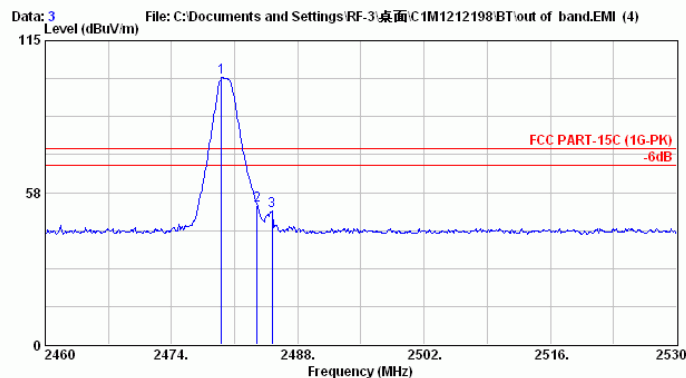
EUT: Notebook Humidity: 61%

Test Mode: Transmit, Channel: 39, Frequency: 2480MHz, Low Energy

	Emission Frequency	Antenna Factor	Cable Loss	Meter Reading Vertical	Emission Level Vertical	Limits	Margin
	(MHz)	(dB/m)	(dB)	(dBμV)	(dBμV/m)	(dBμV/m)	(dB)
Peak *	2483.500	28.66	6.45	17.44	52.55	74.00	21.45

	Emission Frequency	Peak Value	Duty Cycle Correction Factor	Average Value	Limit	Margin
	(MHz)	(dB/m)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
Average *	2483.50	52.55	-3.82	48.74	54.00	5.27

- Remark : 1. Emission Level = Antenna Factor + Cable Loss + Meter Reading.
 2. Low frequency section (spurious in the restricted band 2310-2420MHz).
 3. '*' The field strength of emission appearing within Part 15.205(a) shall not exceed the limits shown in section 15.209.
 4. Duty Cycle Correction Factor = $20\log(\text{cumulative on/T}) = 20\log(0.388\text{ms}/0.602\text{ms}) = -3.82$
 5. The pre-amplifier factor has been subtracted by test program actively.



Site no. : A/C Chamber Data no. : 3
 Dis. / Ant. : 3m 3115(4927) Ant. pol. : VERTICAL
 Limit : FCC PART-15C (1G-PK)
 Env. / Ins. : E4446A 26°C/61% □jianlun_hung
 EUT : HSBUB-SDS
 Power Rating : AC120 / 60Hz
 Test Mode : TX2480 (Low Energy)

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	2479.530	28.66	6.44	65.96	101.06	74.00	-27.06	Peak X
2	2483.500	28.66	6.45	17.44	52.55	74.00	21.45	Peak
3	2485.130	28.66	6.45	15.28	50.39	74.00	23.61	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

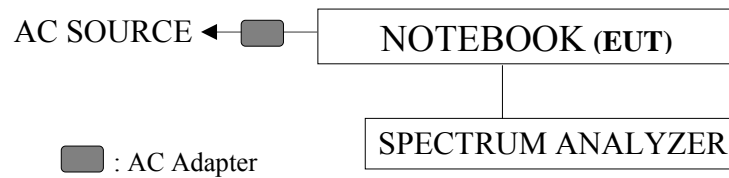
4. 6dB BANDWIDTH MEASUREMENT

4.1. Test Equipment

The following test equipment was used during the Emission Bandwidth measurement:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	N9030A-544	US51350140	Oct. 17, 12'	Oct. 16, 13'

4.2. Block Diagram of Test Setup



4.3. Specification Limits [§15.247(a)(2), RSS-210 §A8.2 (a)]

The minimum 6dB bandwidth shall be at least 500kHz.

4.4. Operating Condition of EUT

The test program “WL command” for WLAN and test program “WIN8App” for Low Energy was used to enable the EUT to transmit data at different channel frequency individually.

4.5. Test Procedure

The transmitter output was connected to the spectrum analyzer. The bandwidth of the fundamental frequency was measure by spectrum analyzer with 1.5% EBW, $VBW \geq 3 \times RBW$. The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB. The measurement guideline was according to KDB 558074 D01 V02.

4.6. Test Results

PASSED. All the test results are attached in next pages.

4.6.1. WLAN Function

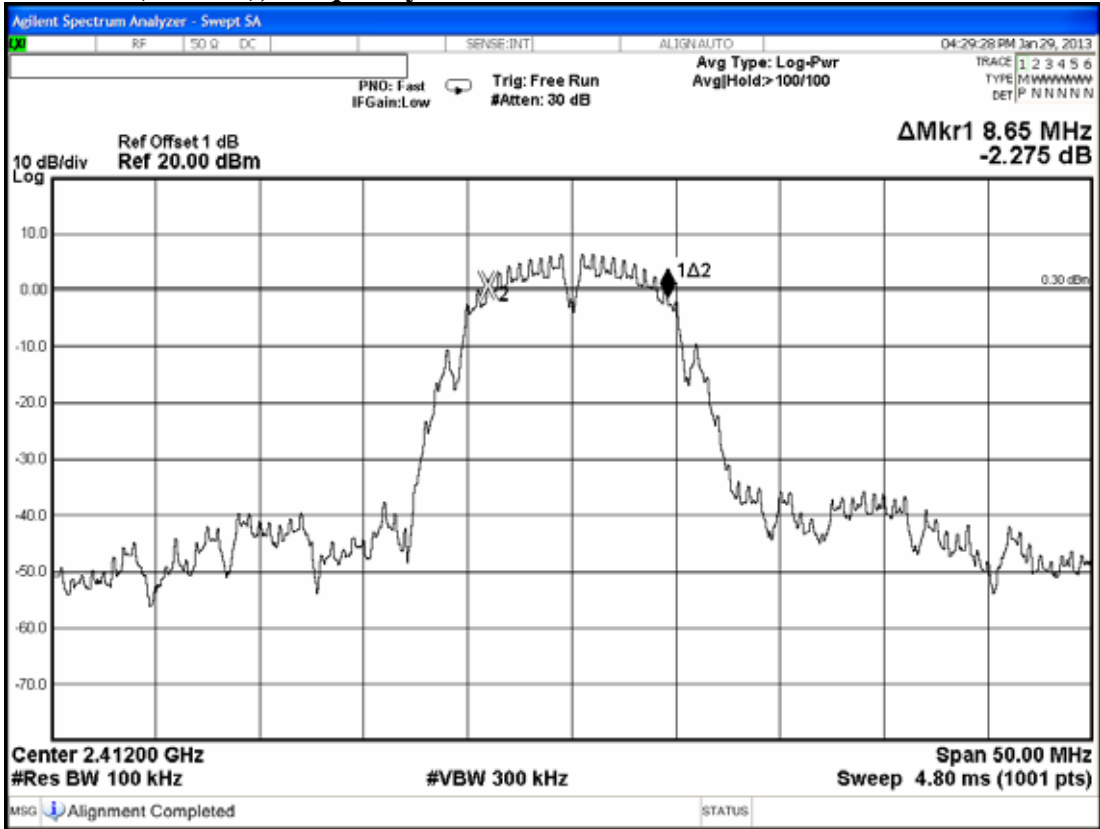
Pursuant to KDB 662911, the test results of 802.11n-H20/H40 have been included 3 dB is calculated from $10\log(N)$, where N is the number of outputs.

Test Date: Jan. 29, 2013 Temperature: 24 Humidity: 50%
 Test Date: Jan. 30, 2013 Temperature: 23 Humidity: 52%

Mode	Type of Network	Channel	Frequency	6dB Bandwidth
1.	802.11b (2.4GHz)	CH 1	2412MHz	8.65MHz
2.		CH 6	2437MHz	8.65MHz
3.		CH 11	2462MHz	8.65MHz
4.	802.11g (2.4GHz)	CH 1	2412MHz	16.35MHz
5.		CH 6	2437MHz	16.35MHz
6.		CH 11	2462MHz	16.35MHz
7.	802.11a (5.8GHz)	CH 149	5745MHz	16.05MHz
8.		CH 157	5785MHz	16.05MHz
9.		CH 165	5825MHz	16.05MHz
10.	802.11n-HT20 (2.4GHz)	CH 1	2412MHz	17.40MHz
11.		CH 6	2437MHz	17.40MHz
12.		CH 11	2462MHz	17.40MHz
13.	802.11n-HT20 (5.8GHz)	CH 149	5745MHz	16.60MHz
14.		CH 157	5785MHz	16.60MHz
15.		CH 165	5825MHz	16.60MHz
16.	802.11n-HT40 (2.4GHz)	CH 3	2422MHz	36.40MHz
17.		CH 6	2437MHz	36.40MHz
18.		CH 9	2452MHz	36.40MHz
19.	802.11n-HT40 (5.8GHz)	CH 151	5755MHz	36.40MHz
20.		CH 159	5795MHz	36.40MHz

[Limit: least 500kHz]

802.11b (2.4GHz), Frequency: 2412MHz



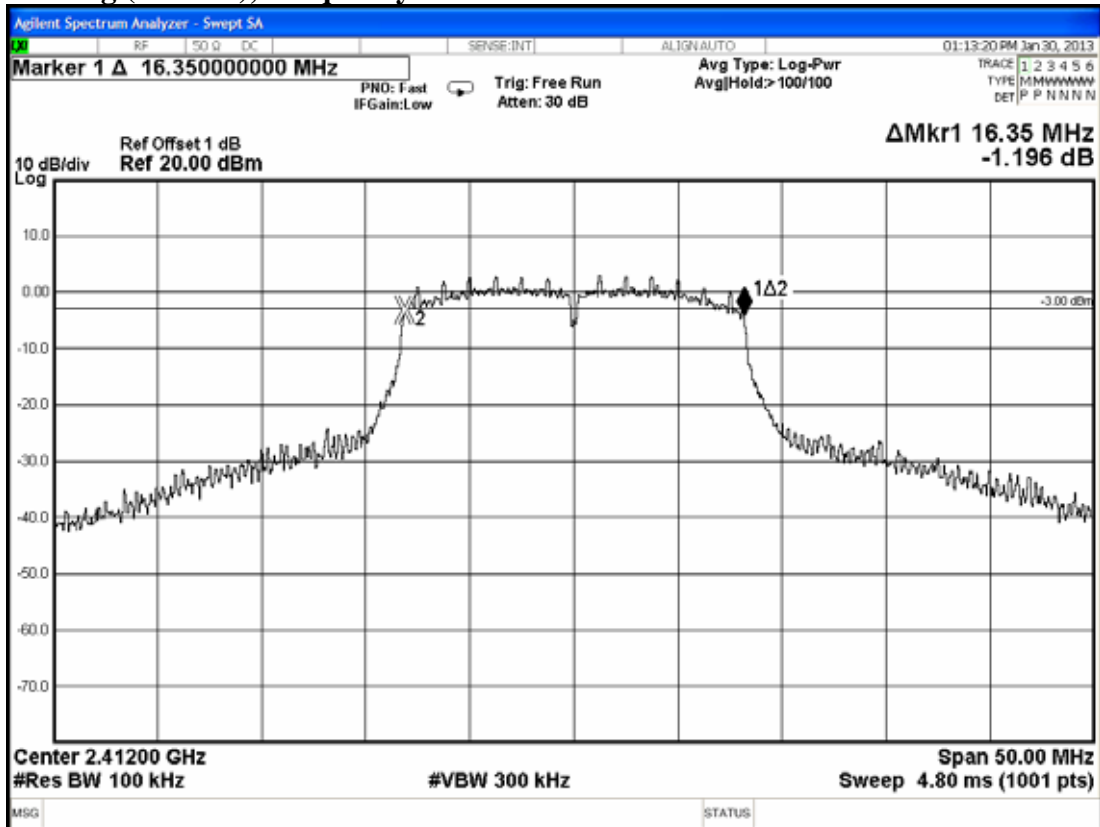
802.11b (2.4GHz), Frequency: 2437MHz



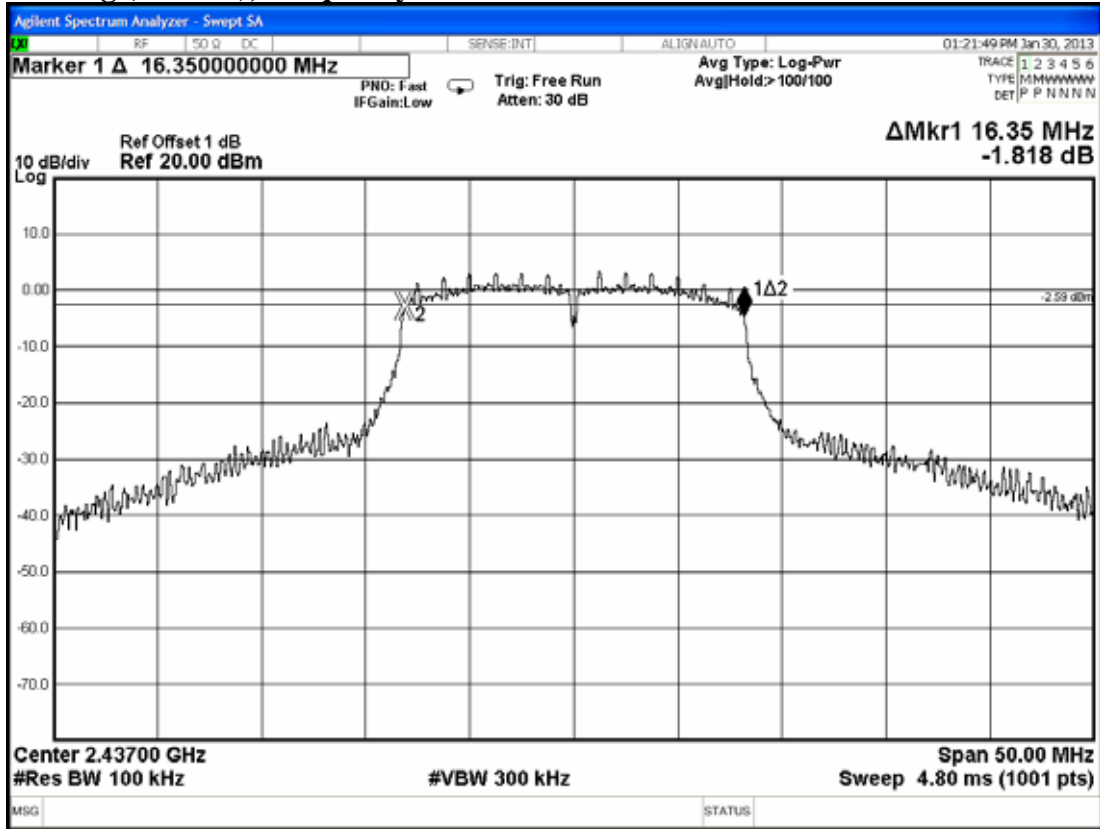
802.11b (2.4GHz), Frequency: 2462MHz



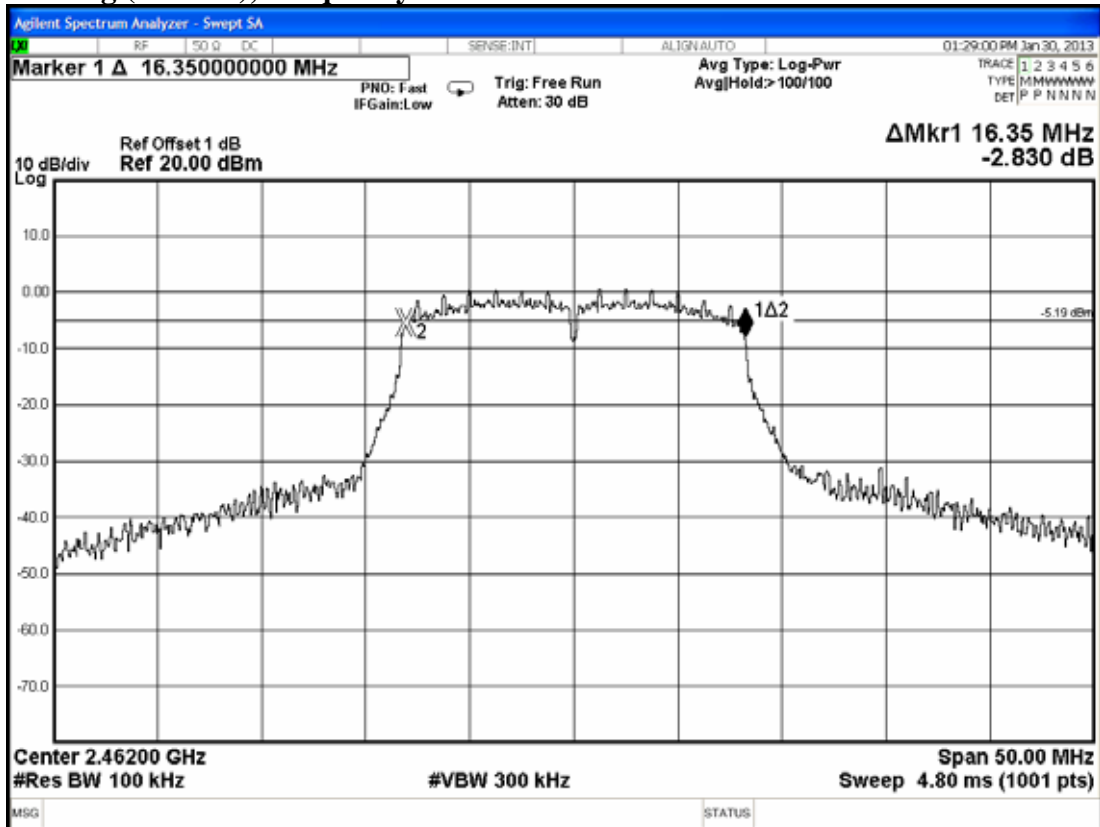
802.11g (2.4GHz), Frequency: 2412MHz



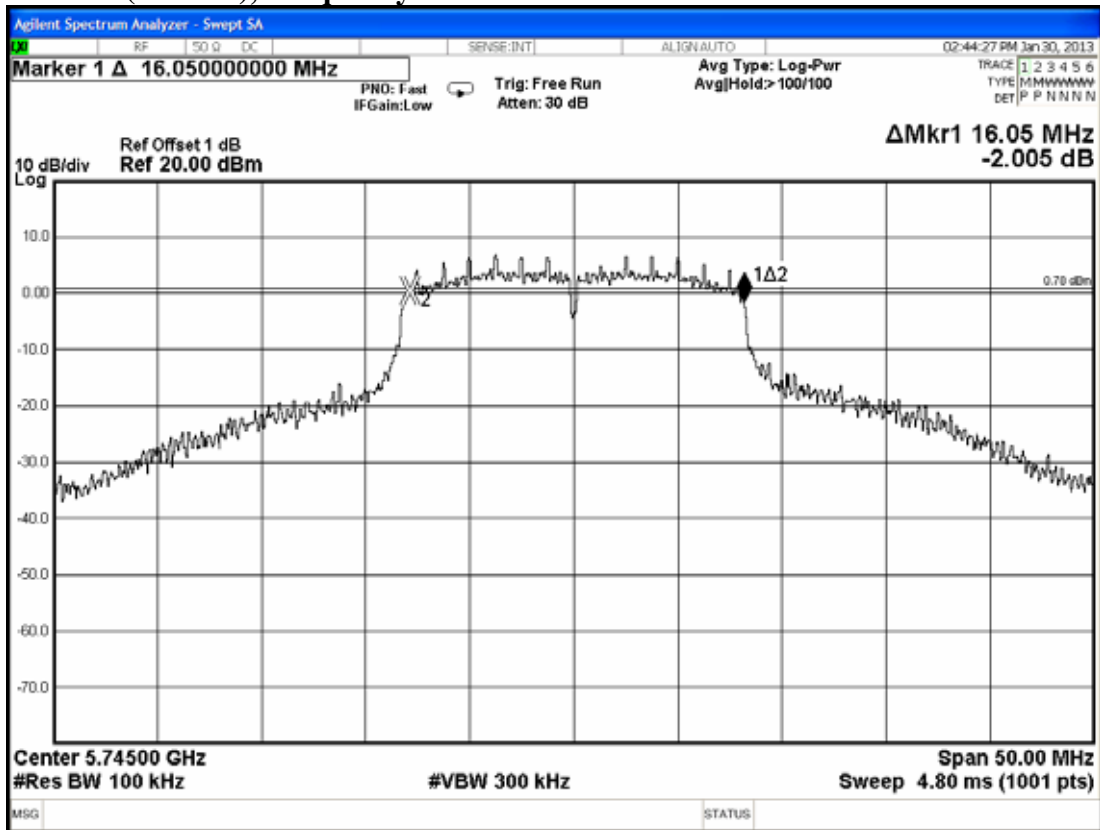
802.11g (2.4GHz), Frequency: 2437MHz



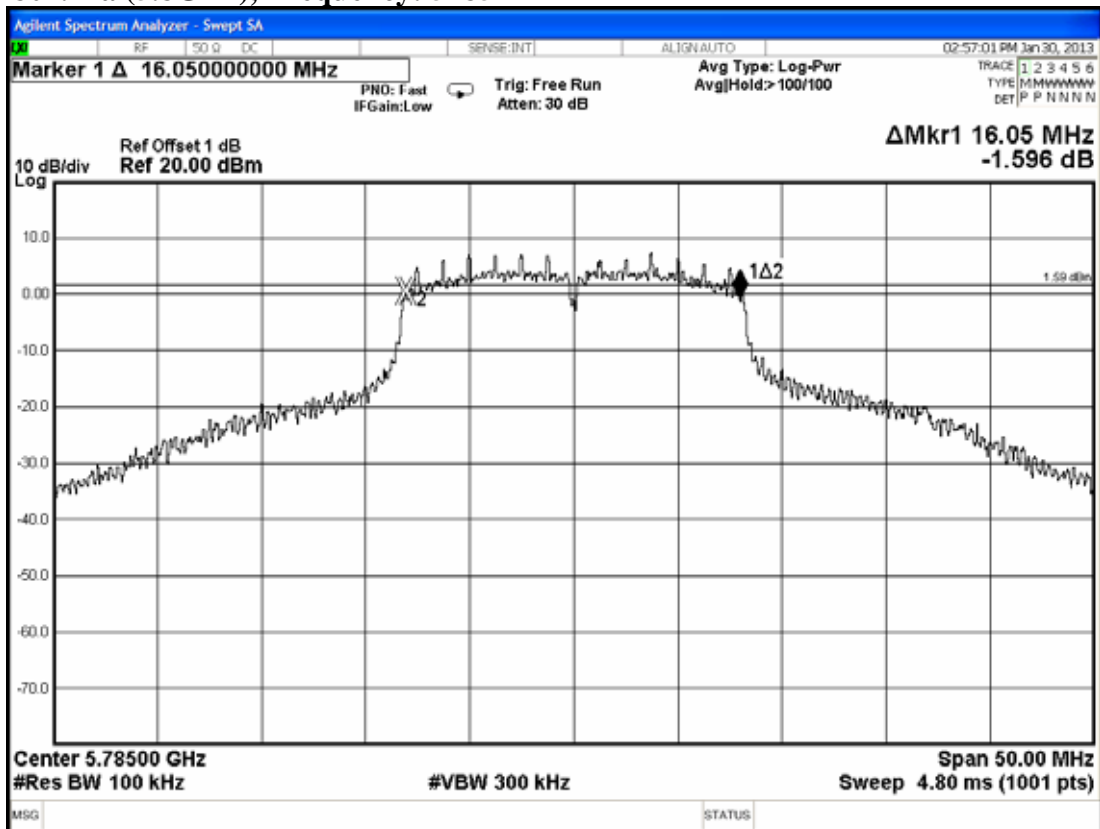
802.11g (2.4GHz), Frequency: 2462MHz



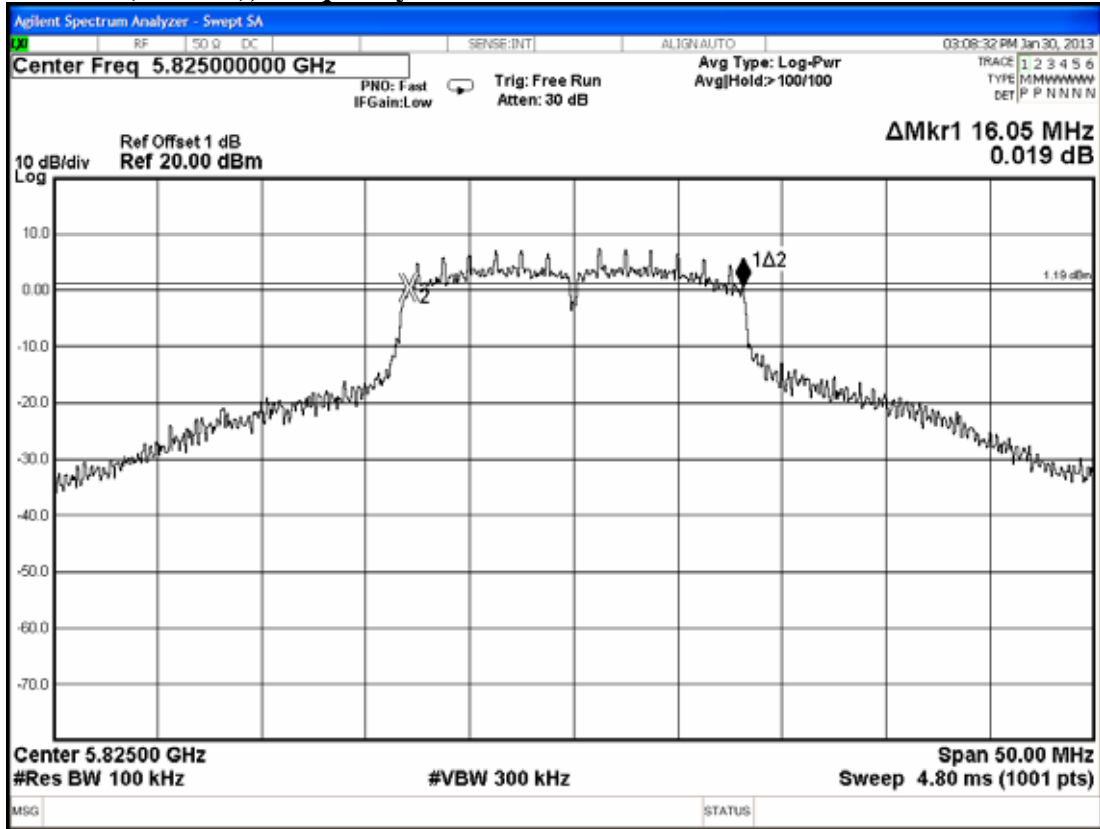
802.11a (5.8GHz), Frequency: 5745MHz



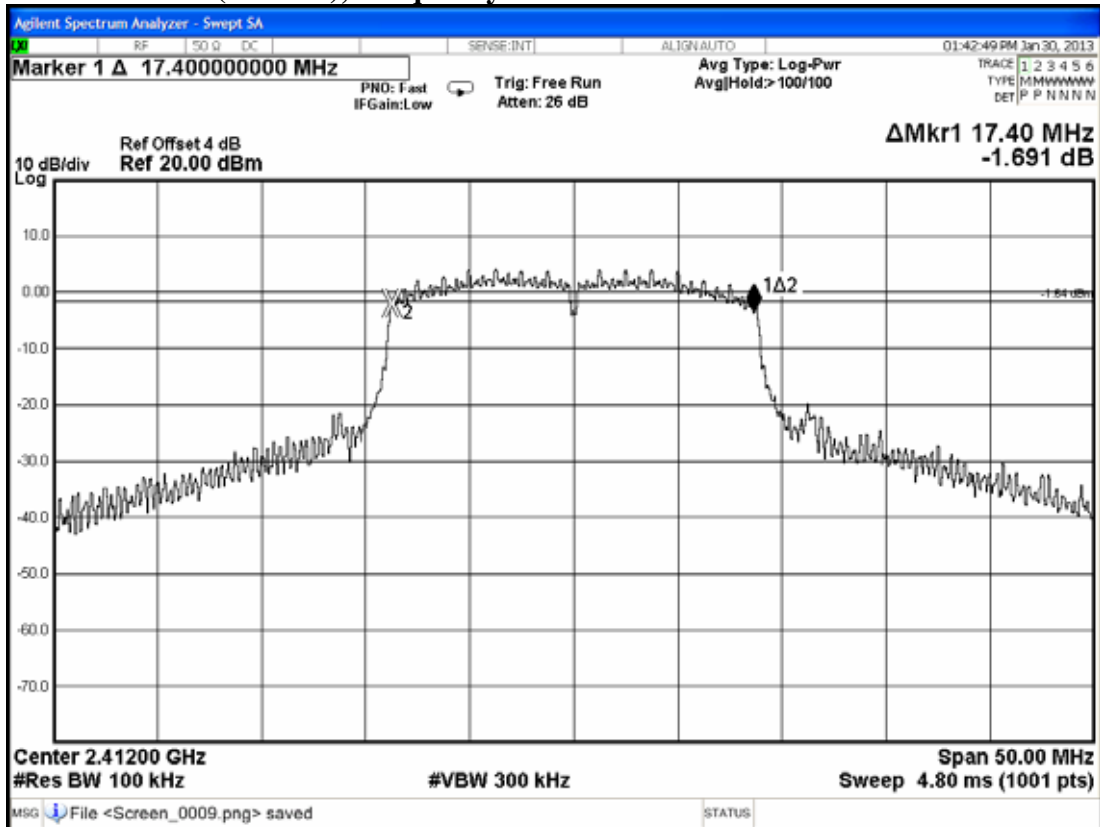
802.11a (5.8GHz), Frequency: 5785MHz



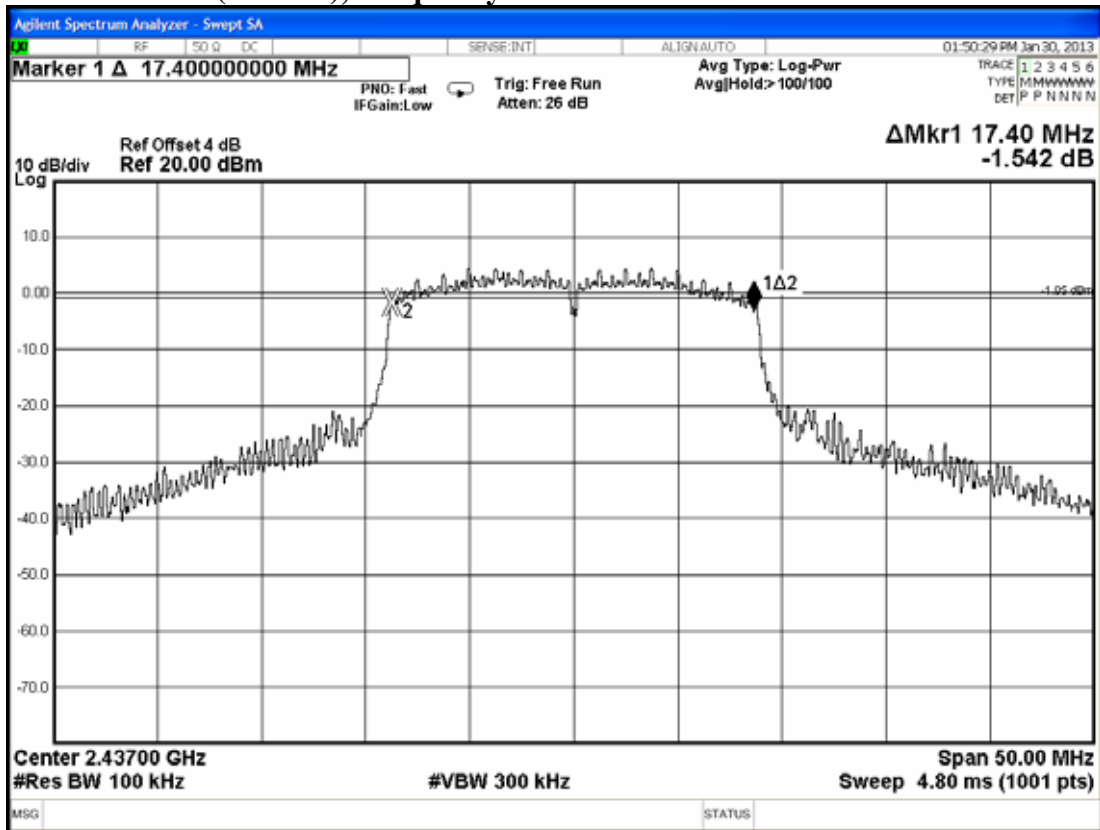
802.11a (5.8GHz), Frequency: 5825MHz



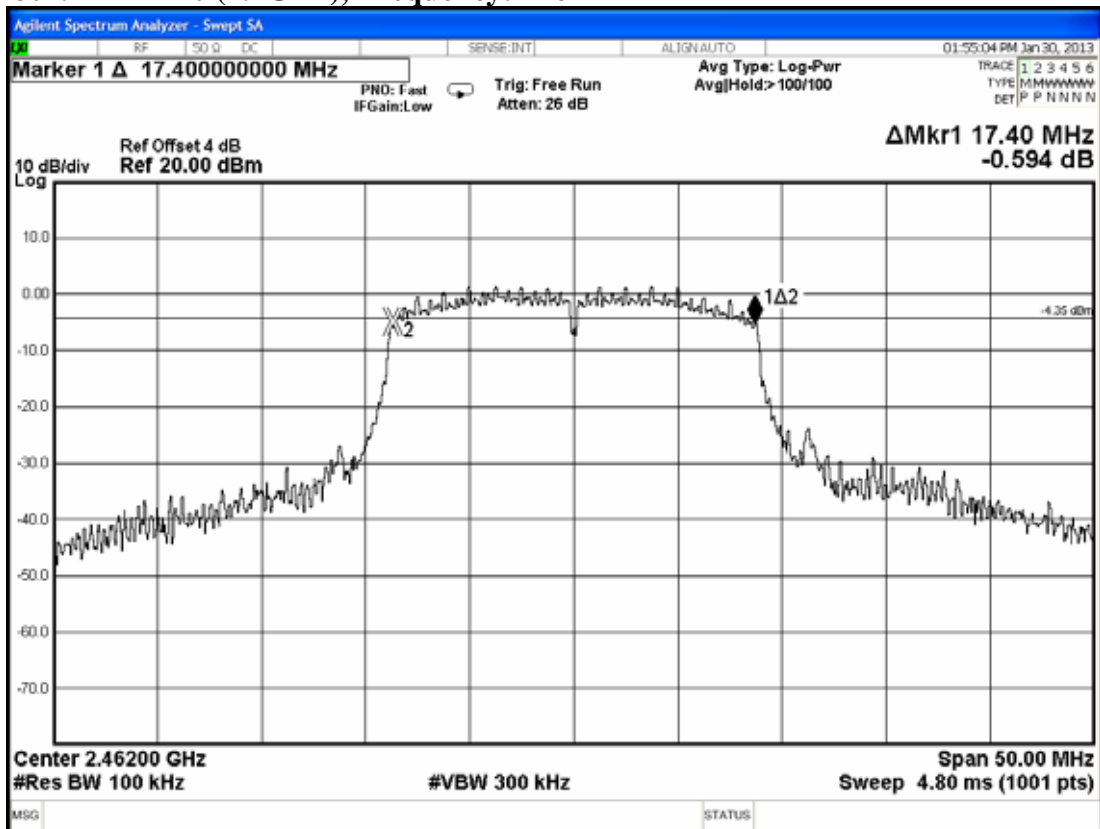
802.11n-HT20 (2.4GHz), Frequency: 2412MHz



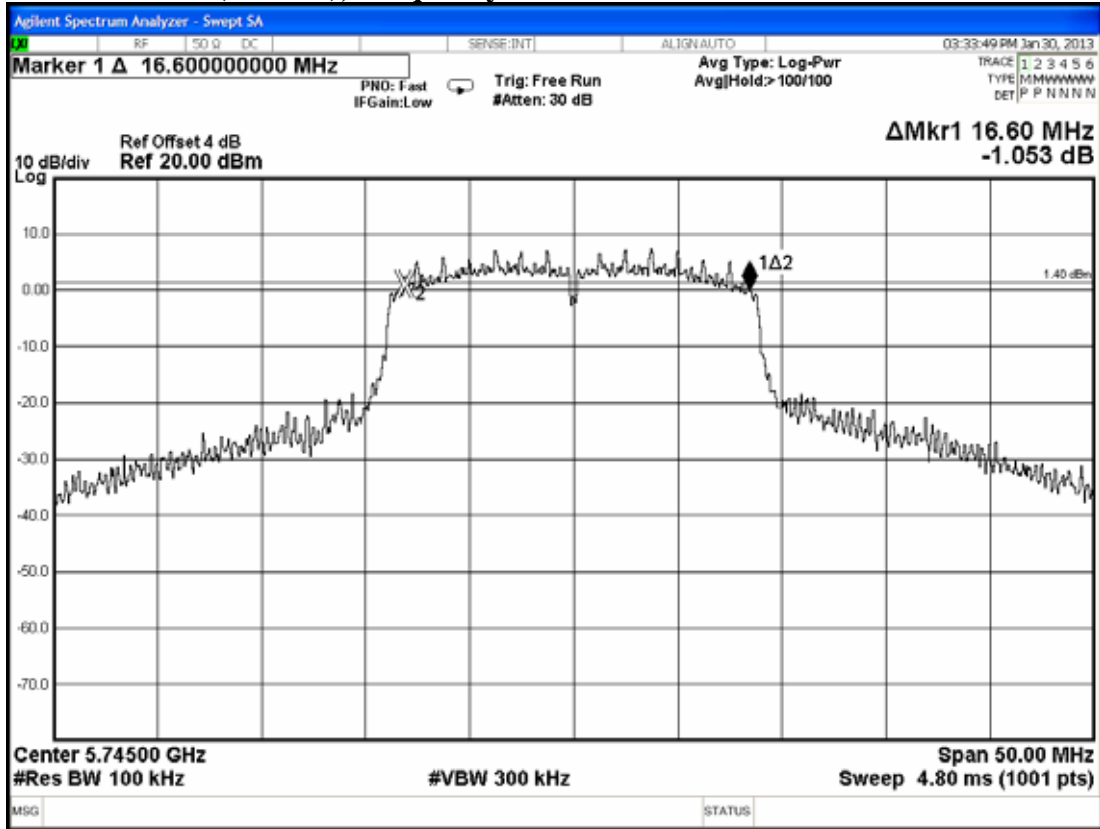
802.11n-HT20 (2.4GHz), Frequency: 2437MHz



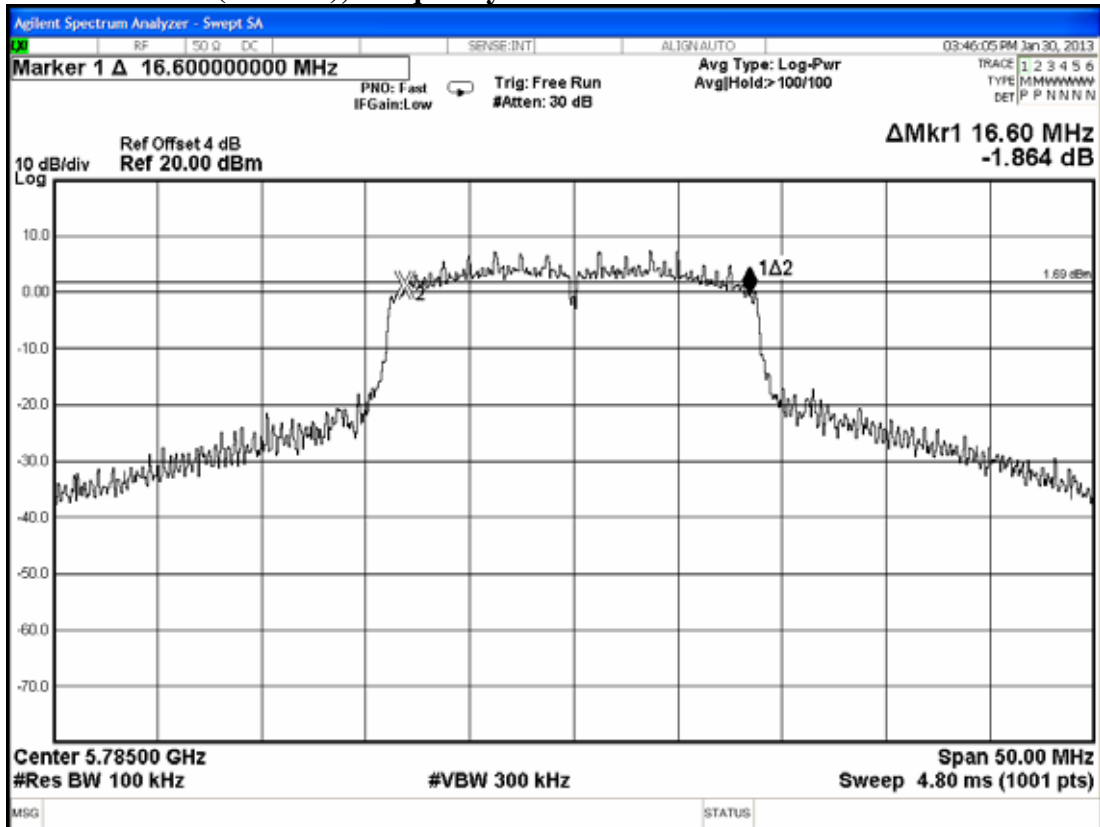
802.11n-HT20 (2.4GHz), Frequency: 2462MHz



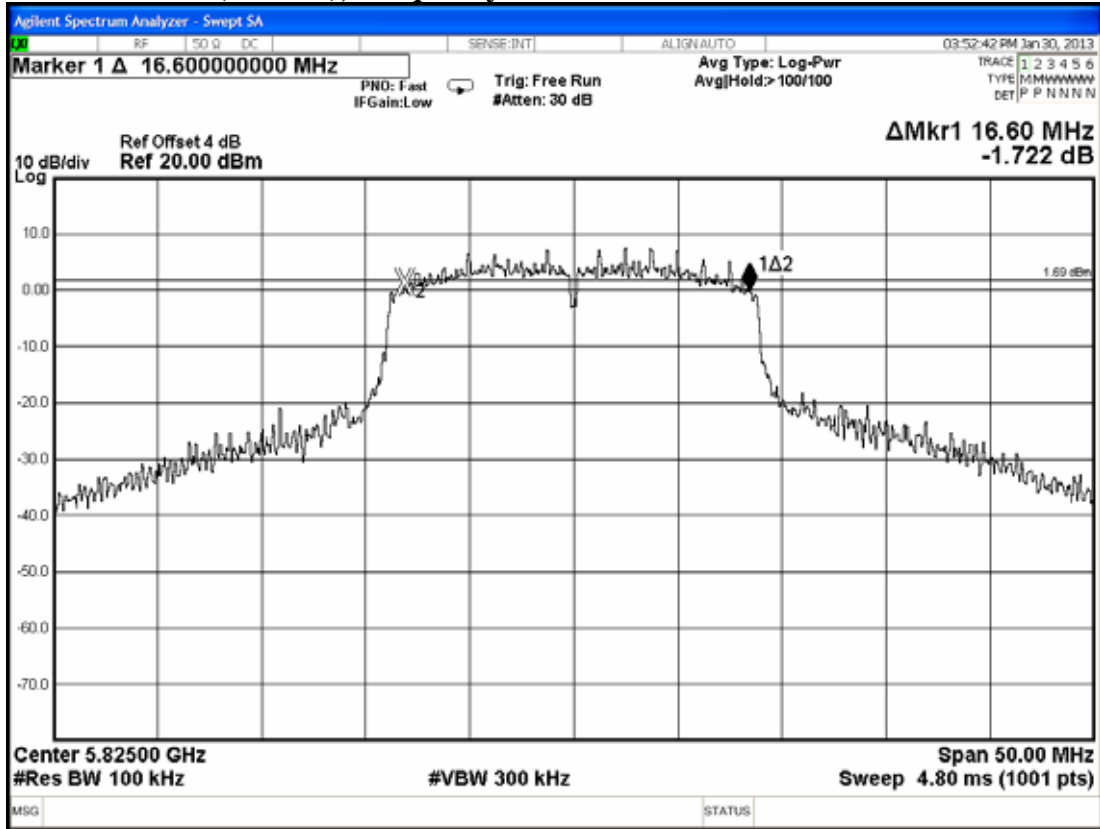
802.11n-HT20 (5.8GHz), Frequency: 5745MHz



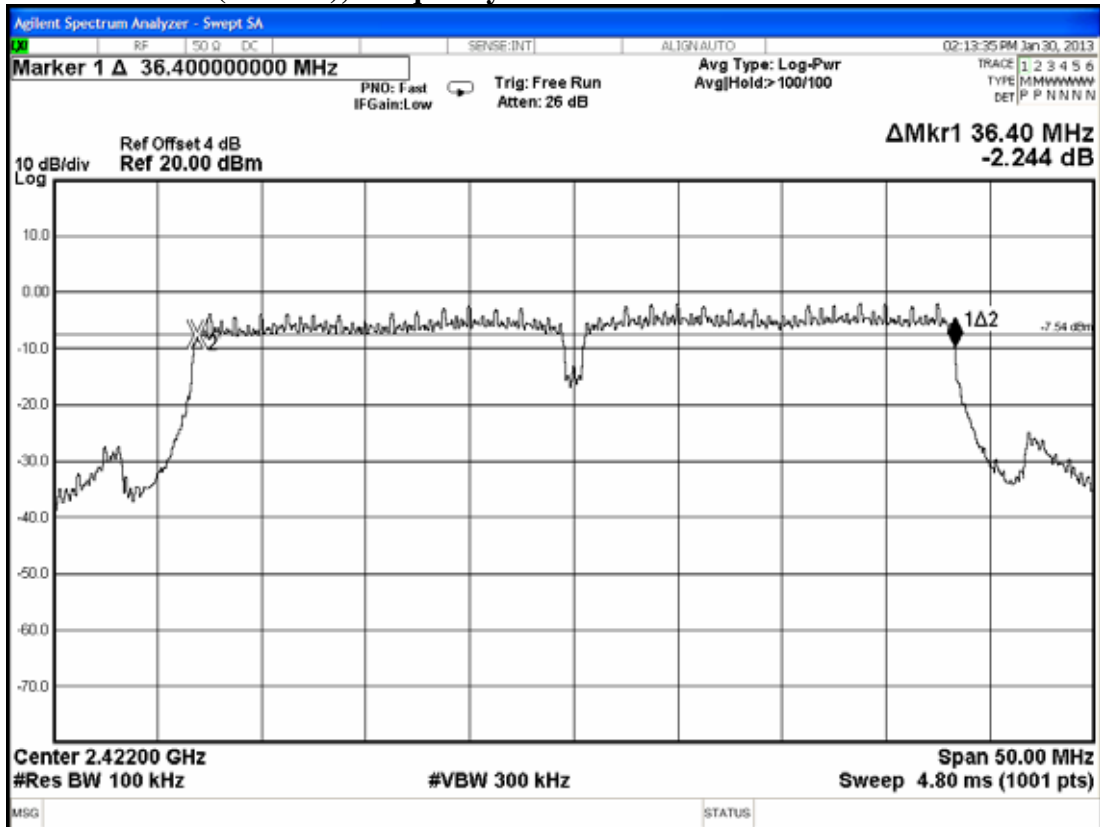
802.11n-HT20 (5.8GHz), Frequency: 5785MHz



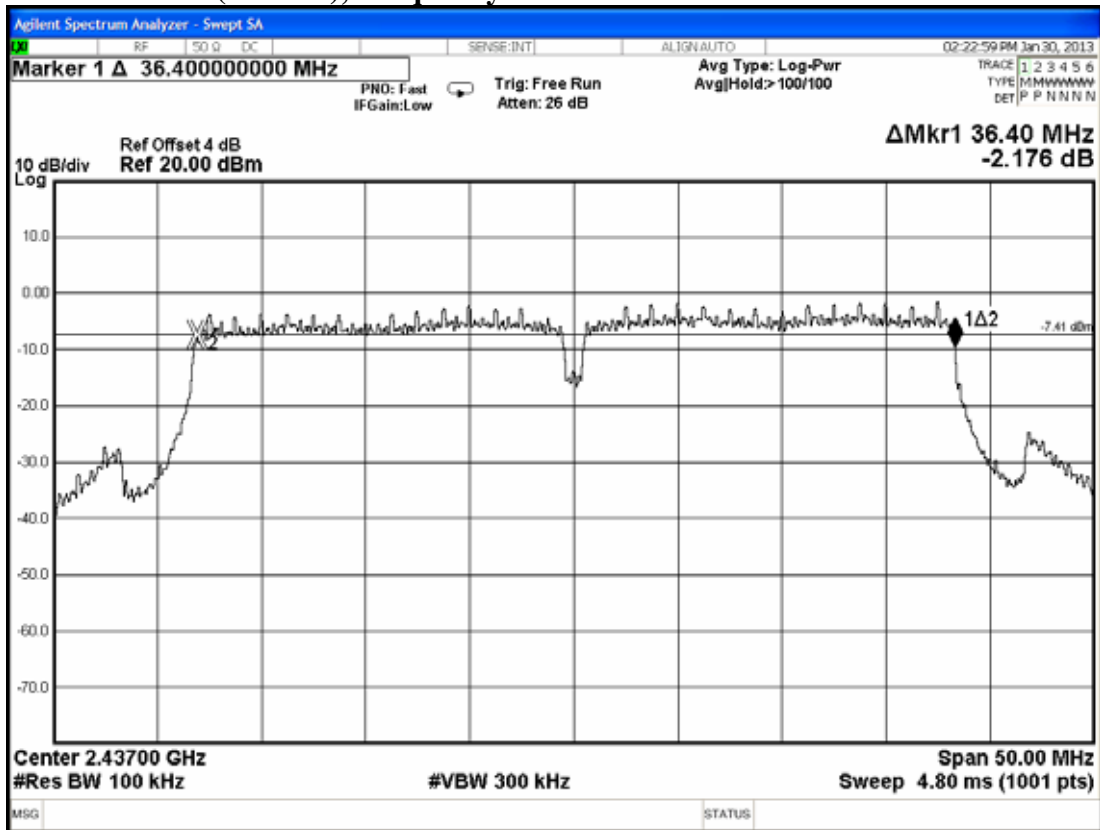
802.11n-HT20 (5.8GHz), Frequency: 5825MHz



802.11n-HT40 (2.4GHz), Frequency: 2422MHz



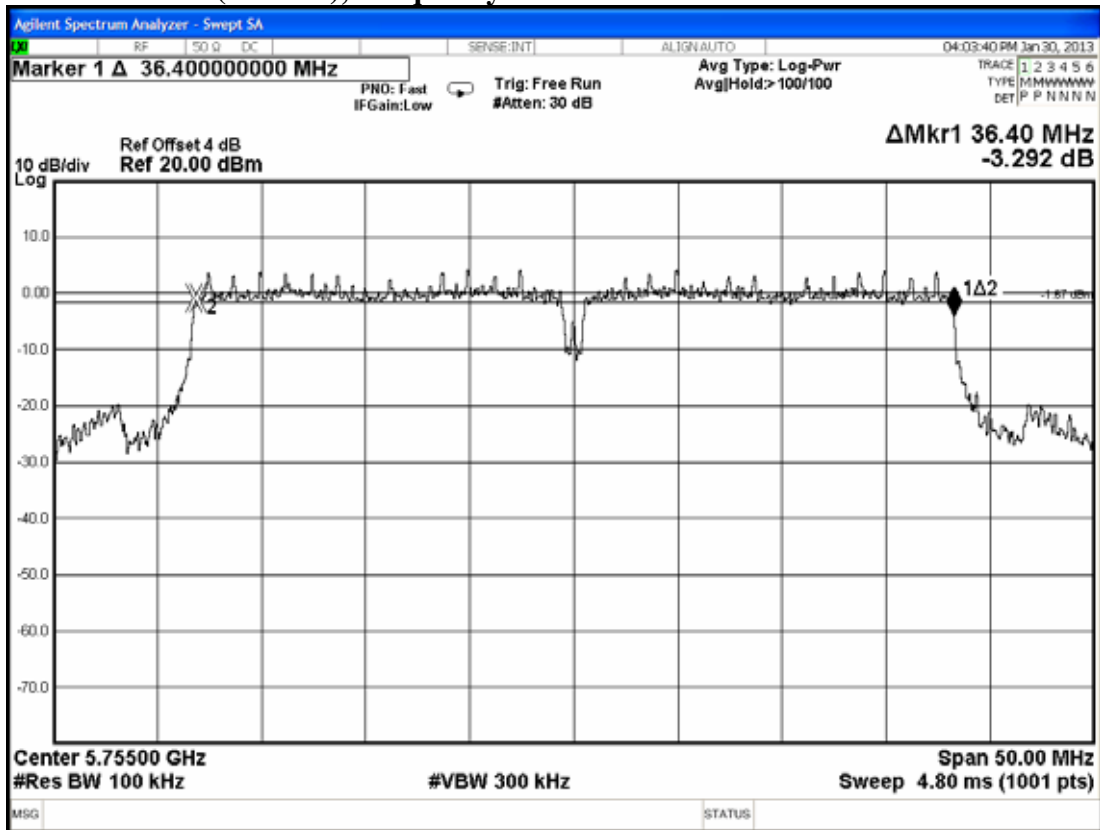
802.11n-HT40 (2.4GHz), Frequency: 2437MHz



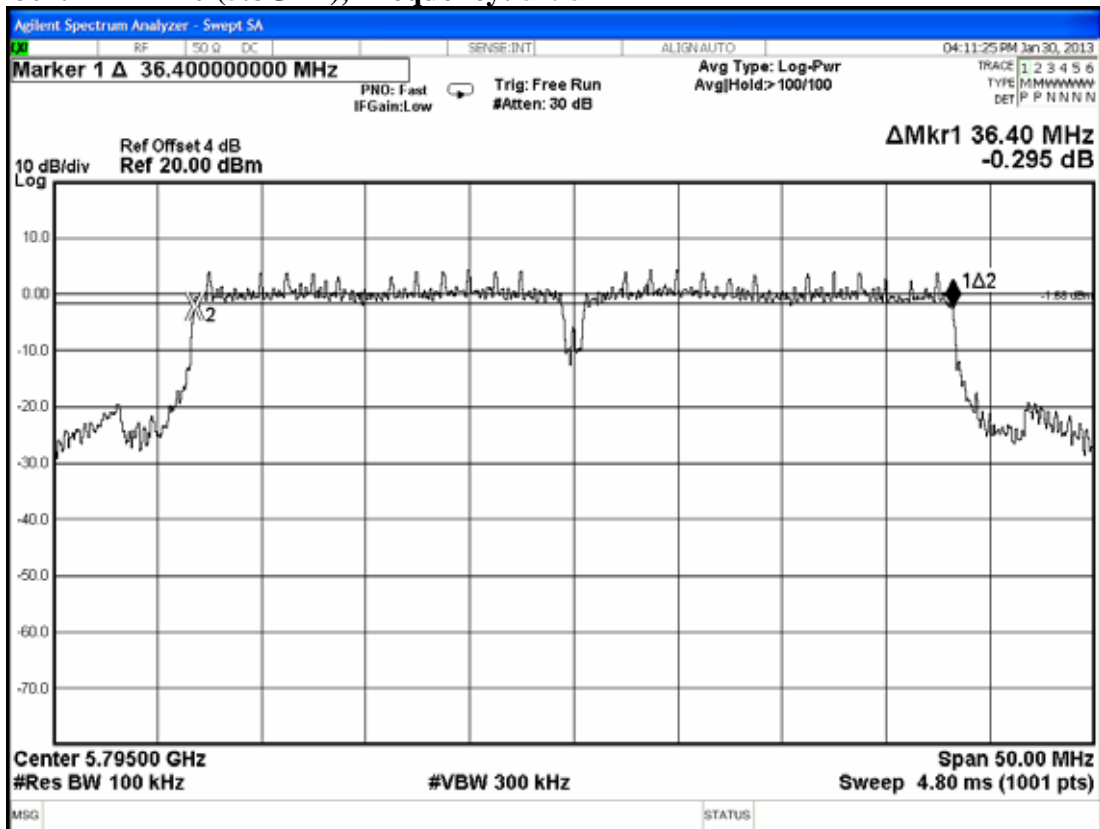
802.11n-HT40 (2.4GHz), Frequency: 2452MHz



802.11n-HT40 (5.8GHz), Frequency: 5755MHz



802.11n-HT40 (5.8GHz), Frequency: 5795MHz



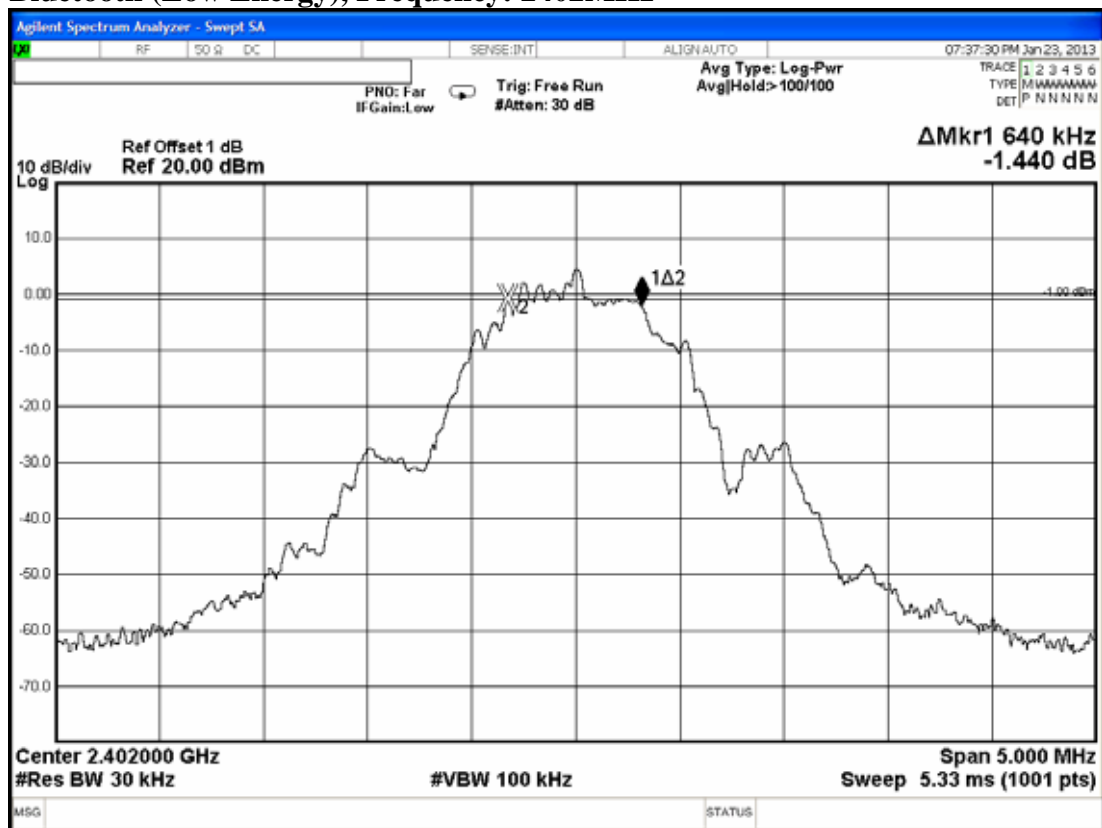
4.6.2. Bluetooth (Low Energy) Function

Test Date: Jan. 23, 2013 Temperature: 24 Humidity: 50%

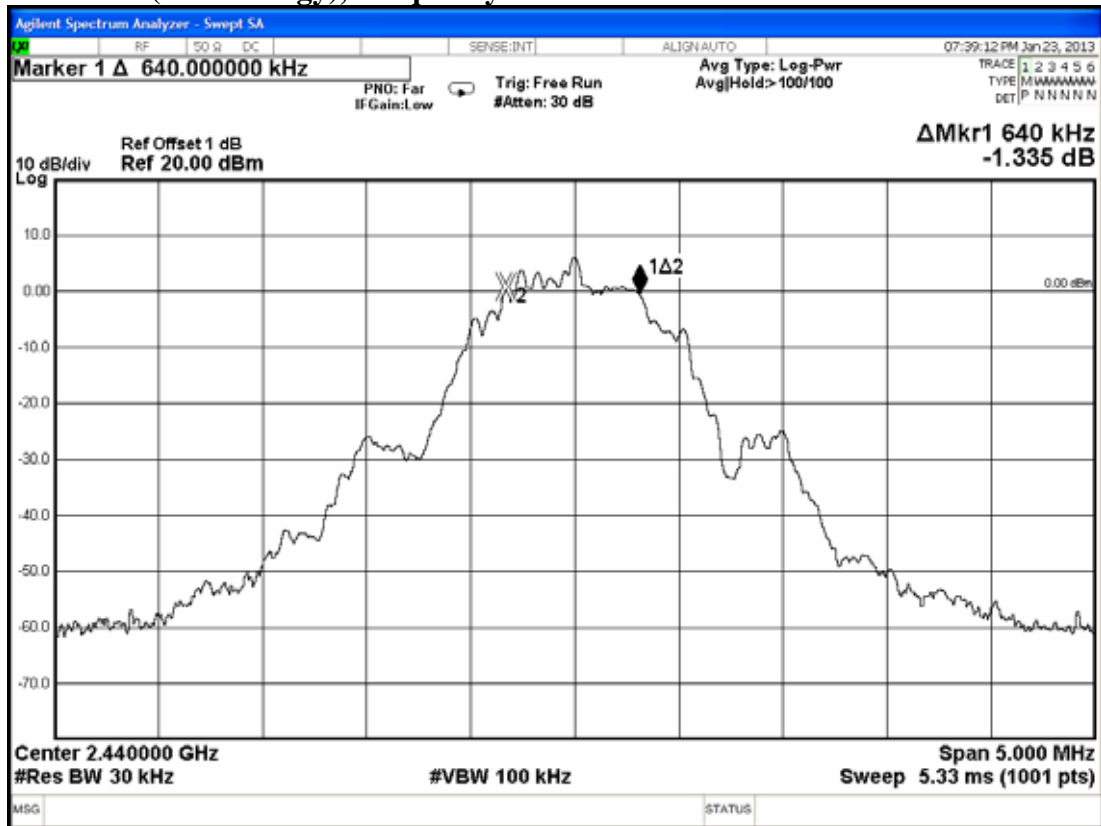
Mode	Channel	Frequency	6dB Bandwidth
1.	CH 0	2402MHz	640kHz
2.	CH 19	2440MHz	640kHz
3.	CH 39	2480MHz	640kHz

[Limit: least 500kHz]

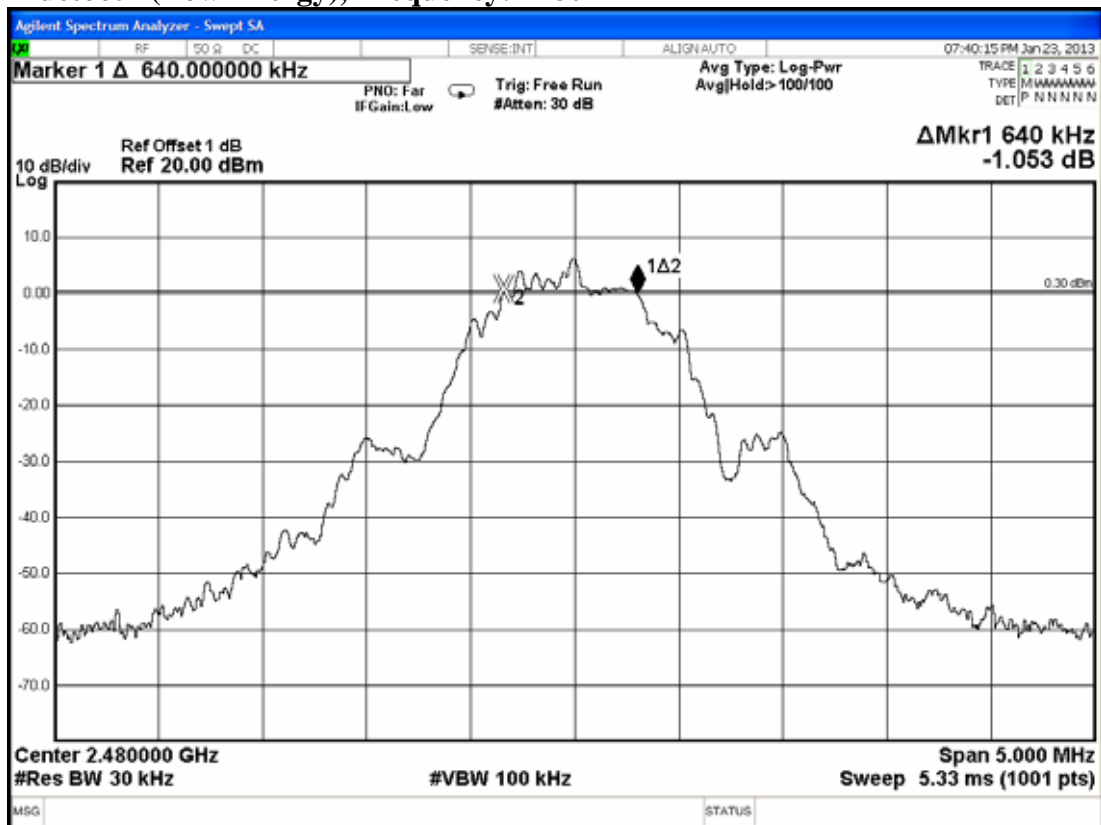
Bluetooth (Low Energy), Frequency: 2402MHz



Bluetooth (Low Energy), Frequency: 2440MHz



Bluetooth (Low Energy), Frequency: 2480MHz



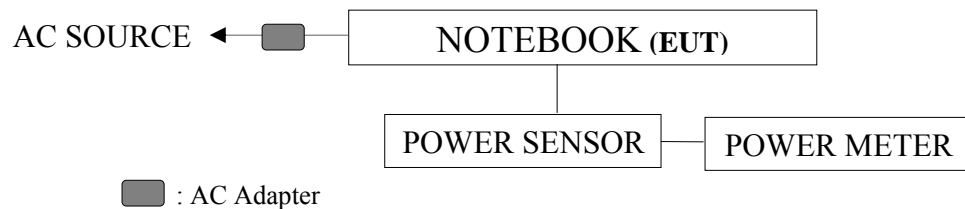
5. MAXIMUM PEAK OUTPUT POWER MEASUREMENT

5.1. Test Equipment

The following test equipment was used during the maximum peak output power measurement:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Power Meter	Anritsu	ML2495A	1145008	Oct. 30, 12'	Oct. 29, 13'
2.	Power Sensor	Anritsu	MA2411B	1126096	Oct. 30, 12'	Oct. 29, 13'

5.2. Block Diagram of Test Setup



5.3. Specification Limits [§15.247(b)-(3), RSS-210 §A8.4 (4)]

The Limits of maximum Peak Output Power for digital modulation in 2400-2483.5MHz & 5725-5850MHz is : 1Watt. (30dBm)

5.4. Operating Condition of EUT

The test program “WL command” for WLAN and test program “WIN8App” for Low Energy was used to enable the EUT to transmit data at different channel frequency individually.

5.5. Test Procedure

The transmitter output was connected to the power sensor and record the reading of power meter.

The measurement guideline was according to KDB 558074 D01 V02.

5.6. Test Results

PASSED. All the test results are listed below.

5.6.1. WLAN Function

Test Date: Feb. 04, 2013 Temperature: 23 Humidity: 63%

Mode	Type of Network	Channel	Frequency	Peak Output Power (dBm)		Total Peak Output Power (dBm)
				Chain 0	Chain 1	
1.	802.11b	CH 1	2412MHz	---	---	18.36
2.		CH 6	2437MHz	---	---	18.55
3.		CH 11	2462MHz	---	---	18.76
4.	802.11g	CH 1	2412MHz	---	---	22.08
5.		CH 6	2437MHz	---	---	22.10
6.		CH 11	2462MHz	---	---	20.90
7.	802.11a	CH 149	5745MHz	---	---	21.57
8.		CH 157	5785MHz	---	---	21.61
9.		CH 165	5825MHz	---	---	21.49
10.	802.11n-HT20	CH 1	2412MHz	21.39	21.34	24.38
11.		CH 6	2437MHz	21.43	21.46	24.46
12.		CH 11	2462MHz	19.52	19.42	22.48
13.	802.11n-HT20	CH 149	5745MHz	21.52	21.38	24.46
14.		CH 157	5785MHz	21.44	21.29	24.38
15.		CH 165	5825MHz	21.29	21.22	24.27
16.	802.11n-HT40	CH 3	2422MHz	18.87	18.80	21.85
17.		CH 6	2437MHz	19.36	18.98	22.18
18.		CH 9	2452MHz	17.02	16.85	19.95
19.	802.11n-HT40	CH 151	5755MHz	21.24	21.20	24.23
20.		CH 159	5795MHz	21.18	21.14	24.17

[Limit: 1Watt. (30dBm)]

5.6.2. Bluetooth (Low Energy) Function

Test Date: Jan. 23, 2013 Temperature: 24 Humidity: 50%

Mode	Channel	Frequency	Peak Output Power (dBm)
1.	CH 0	2402MHz	8.20
2.	CH 19	2440MHz	9.00
3.	CH 39	2480MHz	9.52

6. EMISSION LIMITATIONS MEASUREMENT

Pursuant to KDB558074 D02 that emission levels below limits specified in 15.209 would not be required.

7. BAND EDGES MEASUREMENT

7.1. Test Equipment

The following test equipment was used during the band edges measurement:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	N9030A-544	US51350140	Oct. 17, 12'	Oct. 16, 13'

7.2. Block Diagram of Test Setup

The same as section.4.2.

7.3. Specification Limits [§15.247(c), RSS-210 §A8.5]

7.3.1. WLAN Function

The highest level should be at least 20 dB below reference level as measured in section 8.6.

7.3.2. Bluetooth (Low Energy) Function

The highest level should be at least 20 dB below of reference level.

7.4. Operating Condition of EUT

The test program “WL command” for WLAN and test program “WIN8App” for Low Energy was used to enable the EUT to transmit data at different channel frequency individually.

7.5. Test Procedure

The transmitter output was connected to the spectrum analyzer. Set both RBW=100 kHz and VBW to 300kHz with suitable frequency span including 100kHz bandwidth from band edge.

The measurement guideline was according to KDB 558074 D01 V02.

Pursuant to KDB 662911, we performed conducted tests for both antenna chains and submit test data measured on chain 0 as worse performance.

7.6. Test Results

PASSED. All the test results are attached in next pages.

7.6.1. WLAN Function

Pursuant to KDB 662911, the test results of 802.11n-H20/H40 have been included 3 dB is calculated from $10\log(N)$, where N is the number of outputs.

Test Date: Jan. 29, 2013 Temperature: 25 Humidity: 51%
Test Date: Jan. 30, 2013 Temperature: 23 Humidity: 52%

802.11b (2.4GHz)

Below Band edge:

The highest emission level is -48.282dBm on 2.39990GHz.

Upper Band edge :

The highest emission level is -41.099dBm on 2.48360GHz.

802.11g (2.4GHz)

Below Band edge:

The highest emission level is -29.461dBm on 2.39990GHz.

Upper Band edge :

The highest emission level is -40.450dBm on 2.48360GHz.

802.11a (5.8GHz)

Below Band edge:

The highest emission level is -27.793dBm on 5.72490GHz.

Upper Band edge :

The highest emission level is -33.464dBm on 5.85010GHz.

802.11n-HT20 (2.4GHz)

Below Band edge:

The highest emission level is -27.359dBm on 2.39990GHz.

Upper Band edge :

The highest emission level is -37.851dBm on 2.48360GHz.

802.11n-HT20 (5.8GHz)

Below Band edge:

The highest emission level is -30.096dBm on 5.72490GHz.

Upper Band edge :

The highest emission level is -36.104dBm on 5.85010GHz.

802.11n-HT40 (2.4GHz)

Below Band edge:

The highest emission level is -29.379dBm on 2.3999GHz.

Upper Band edge :

The highest emission level is -40.900dBm on 2.48360GHz.

802.11n-HT40 (5.8GHz)

Below Band edge:

The highest emission level is -29.509dBm on 5.72490GHz.

Upper Band edge :

The highest emission level is -39.133dBm on 5.85010GHz.

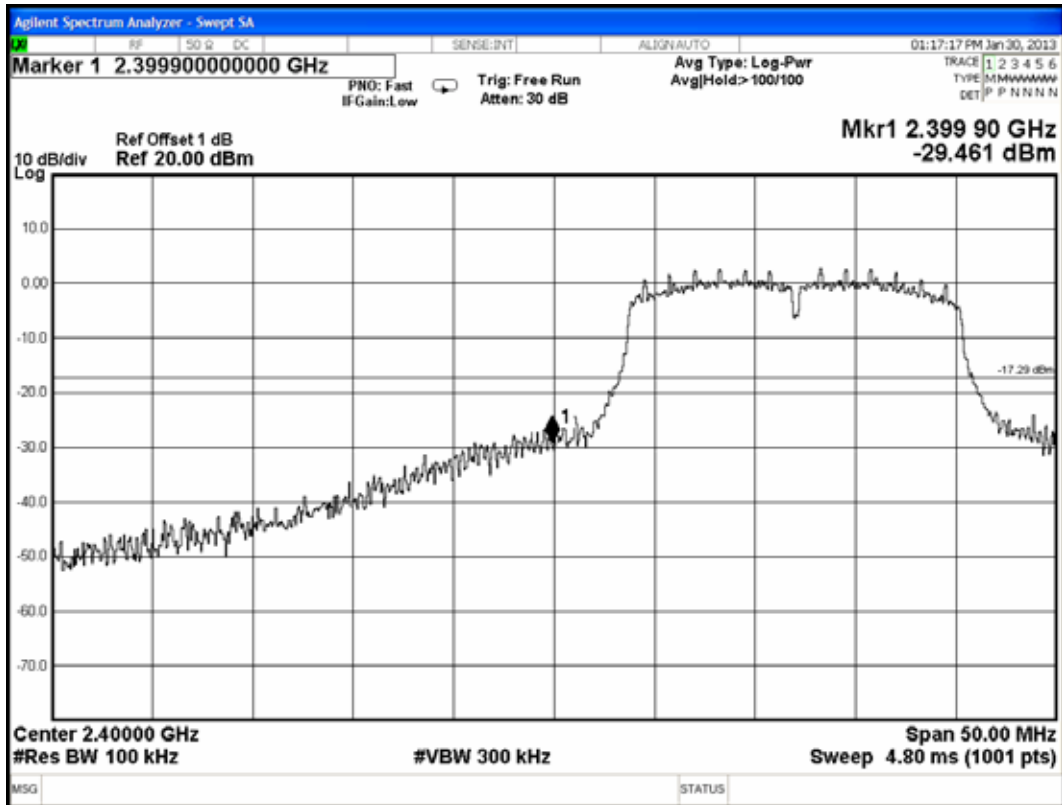
802.11b (2.4GHz) Below Band edge



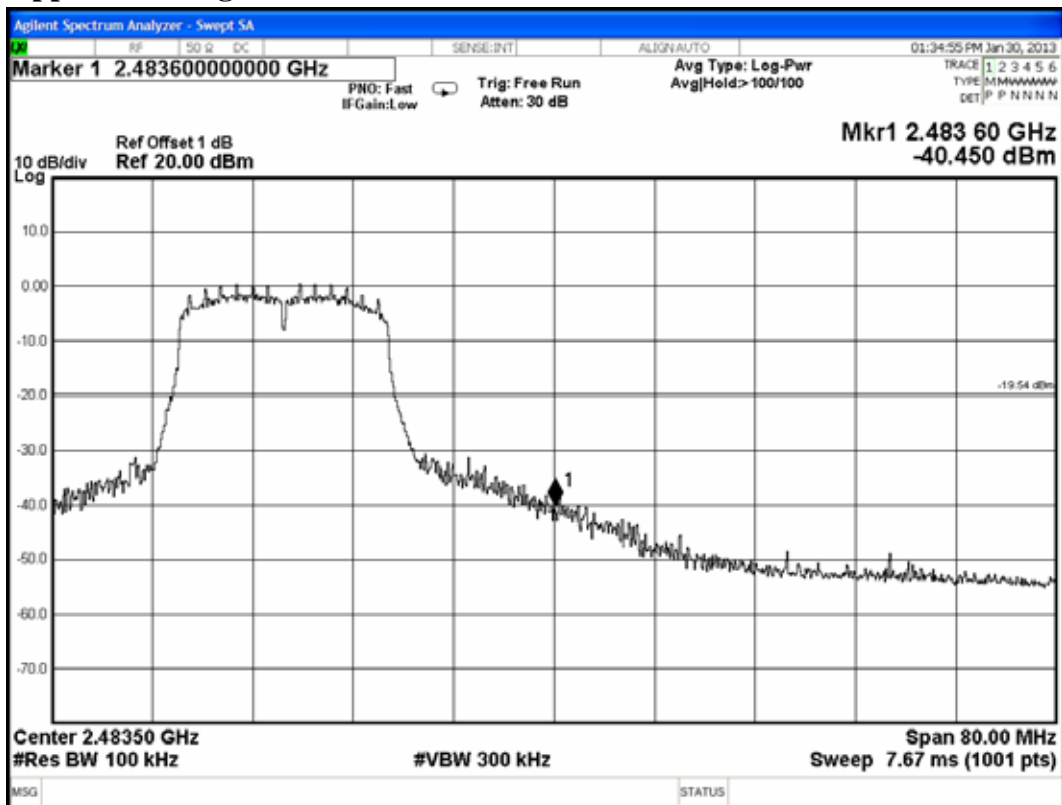
Upper Band edge



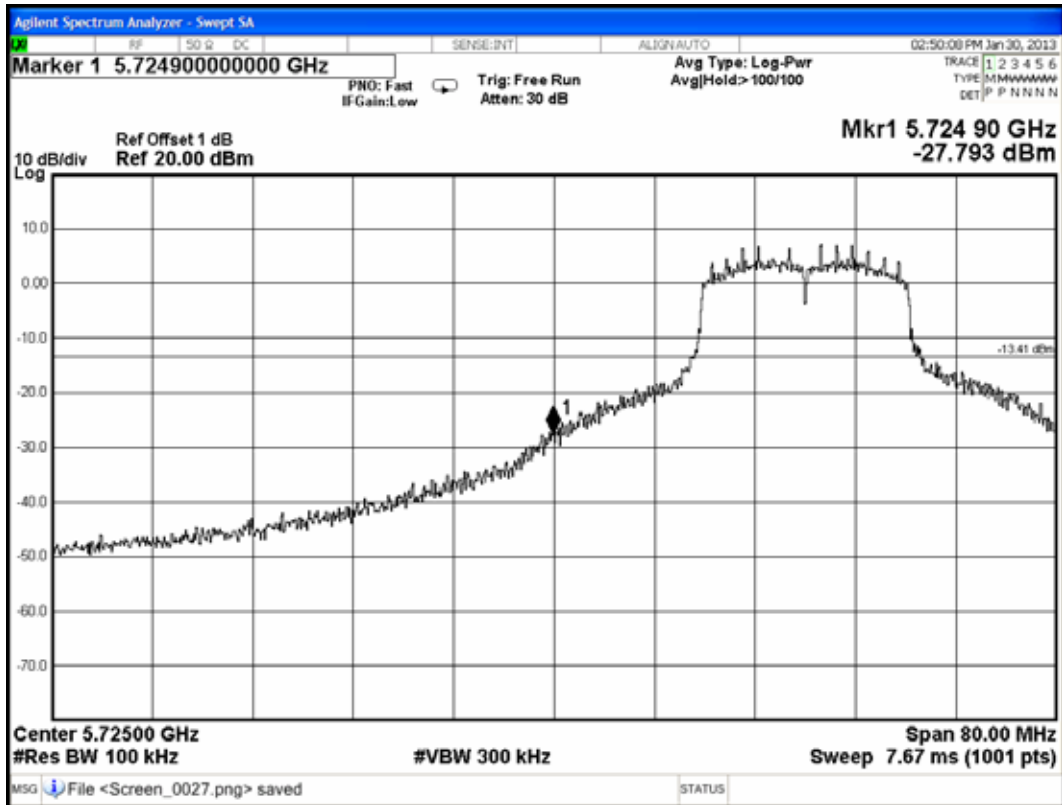
802.11g (2.4GHz) Below Band edge



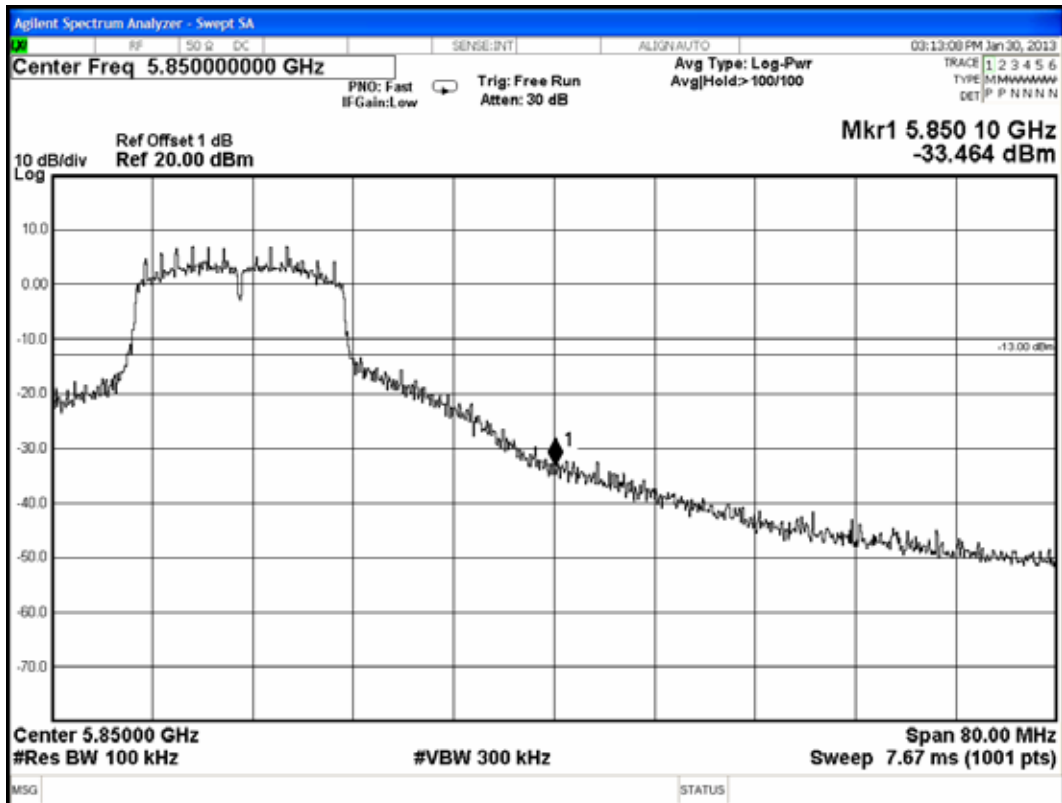
Upper Band edge



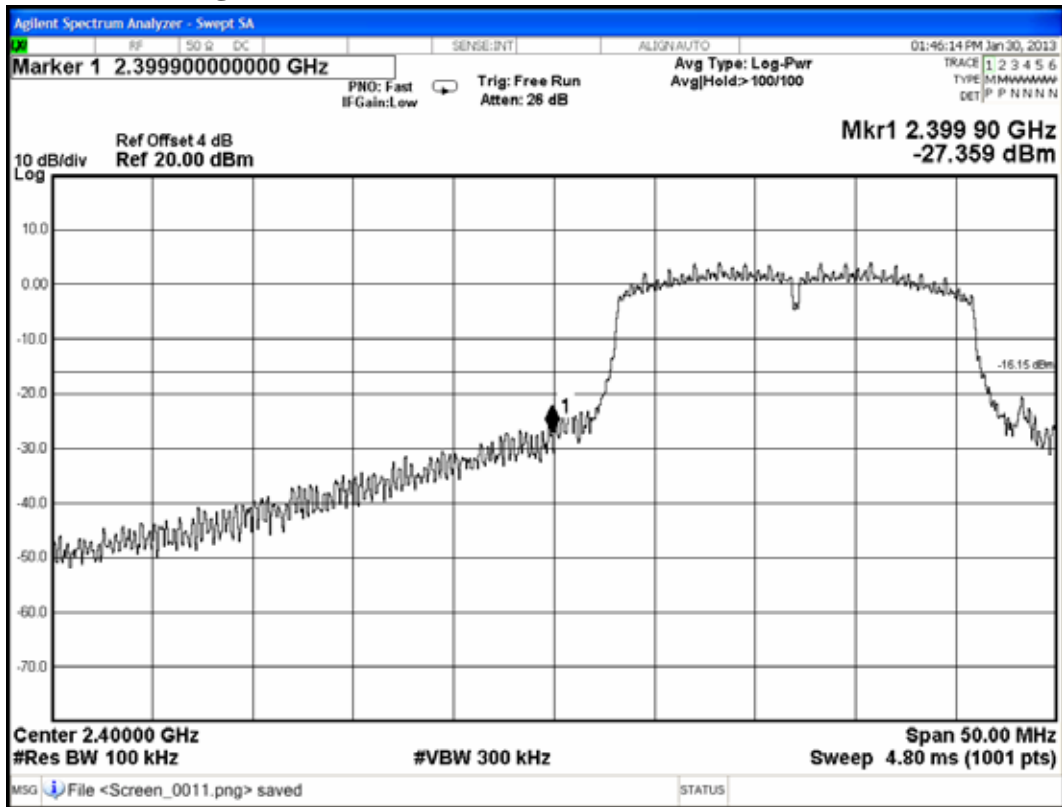
802.11a (5.8GHz) Below Band edge



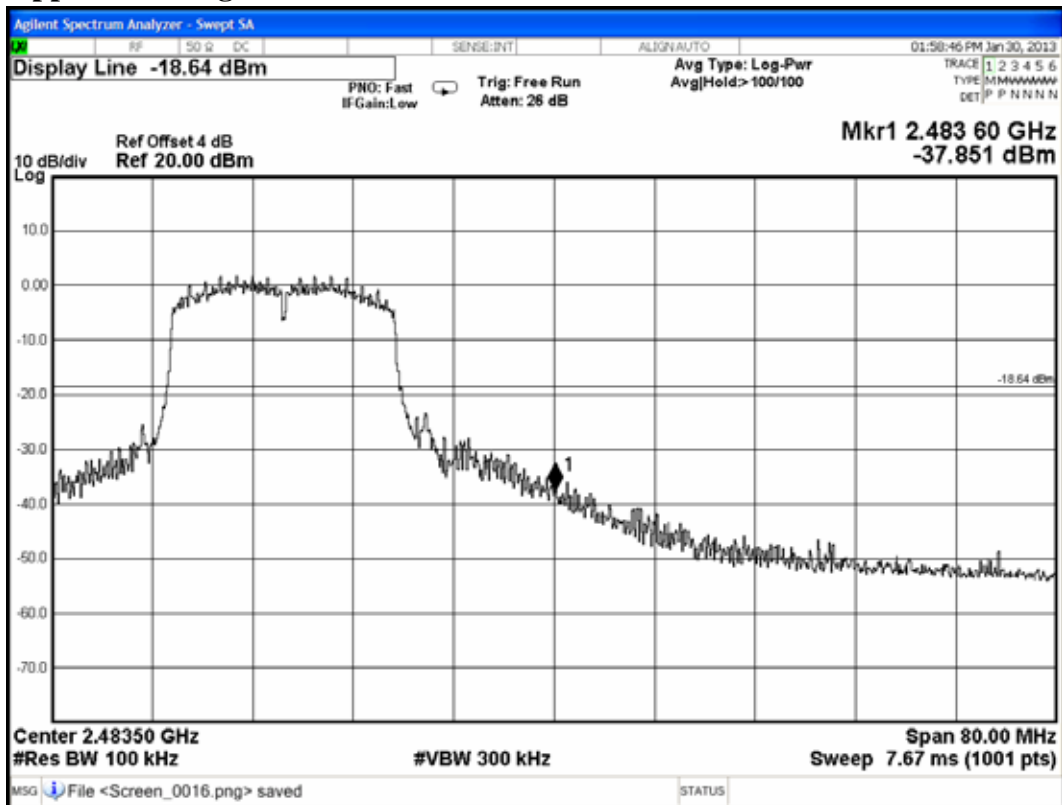
Upper Band edge



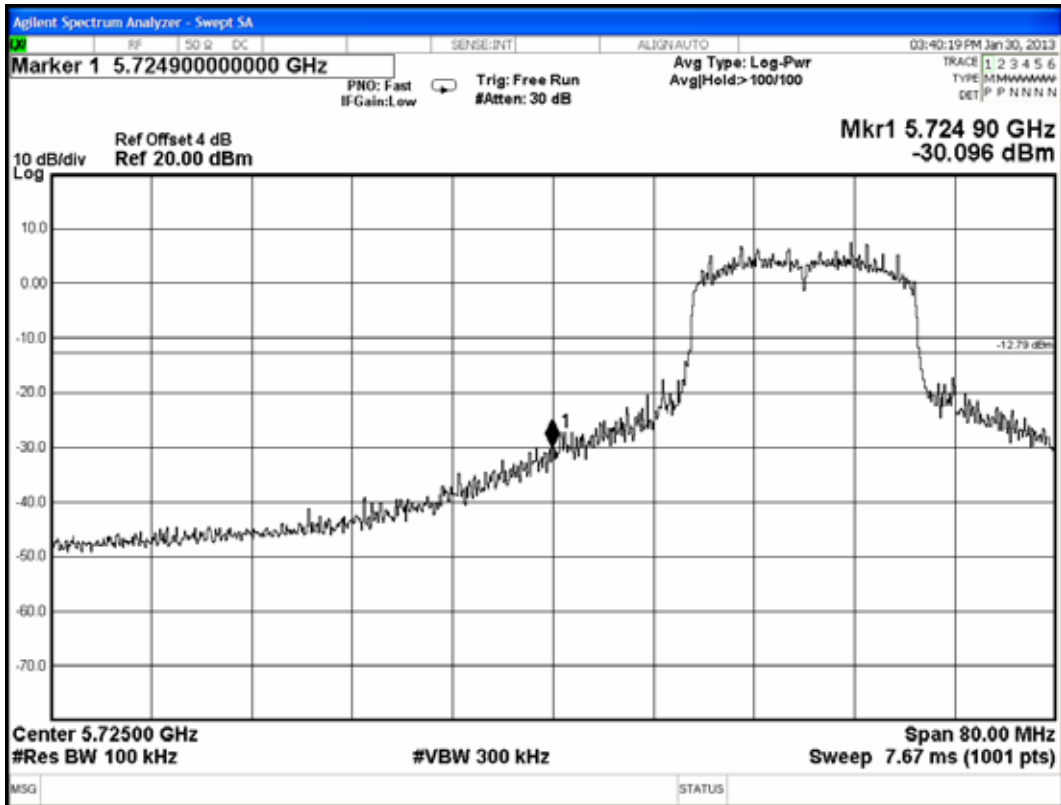
802.11n-HT20 (2.4GHz) Below Band edge



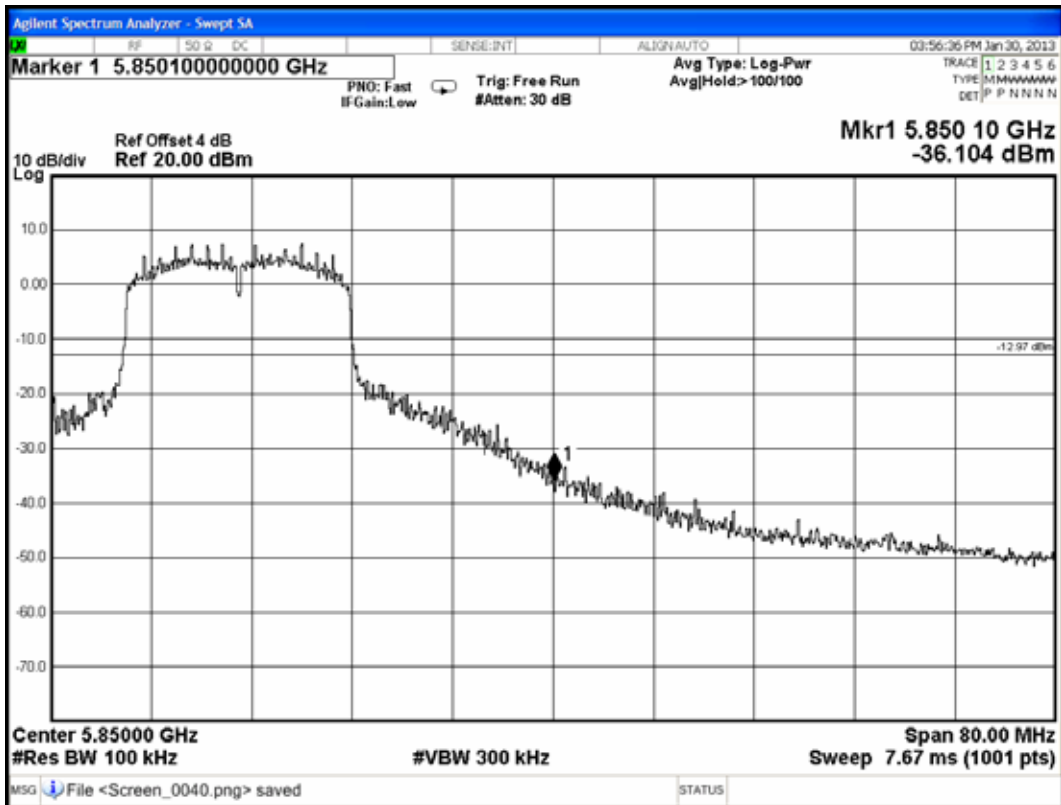
Upper Band edge



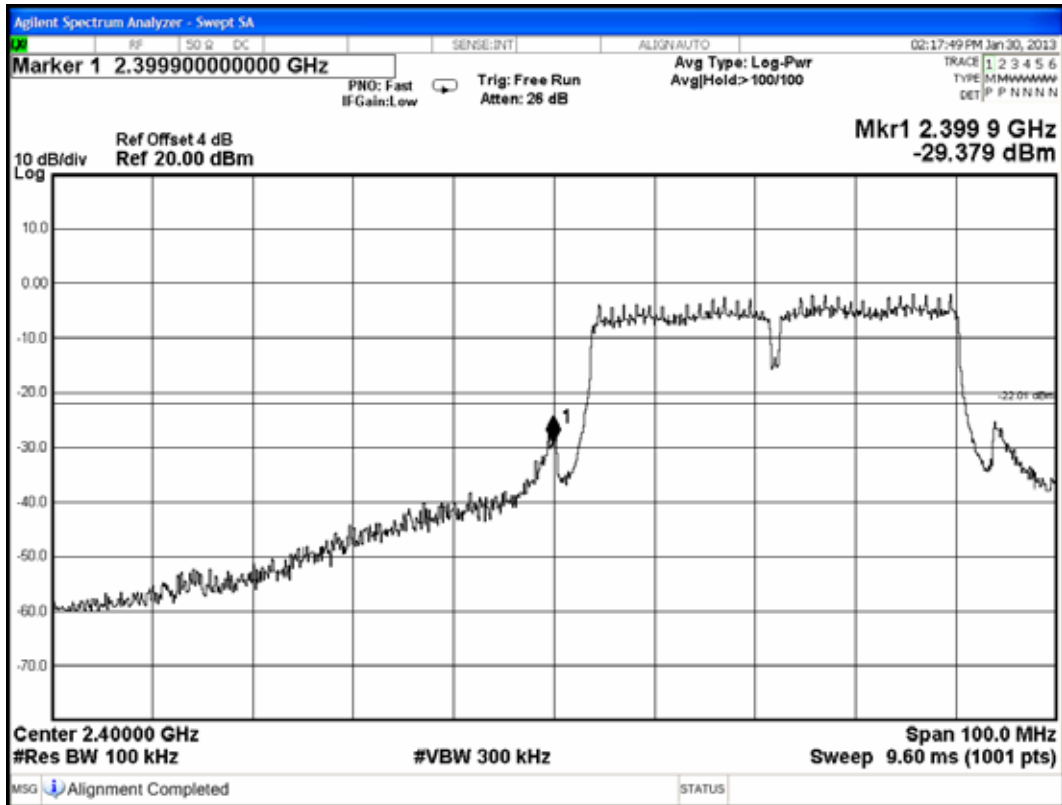
802.11n-HT20 (5.8GHz) Below Band edge



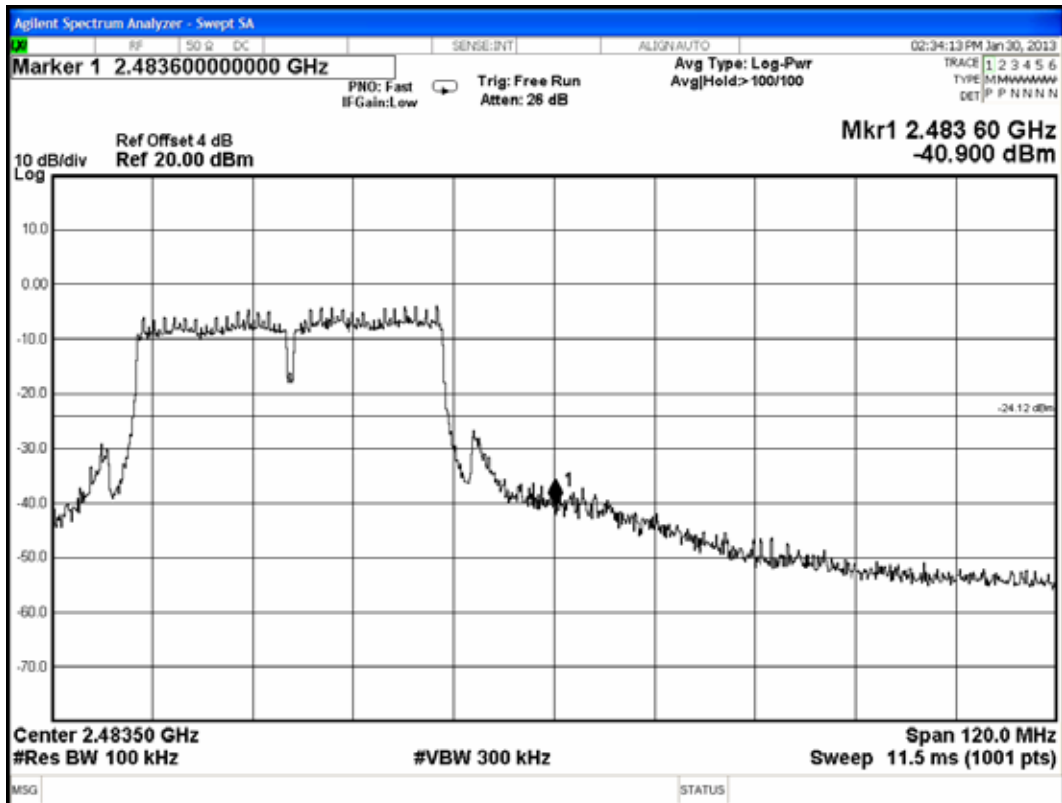
Upper Band edge



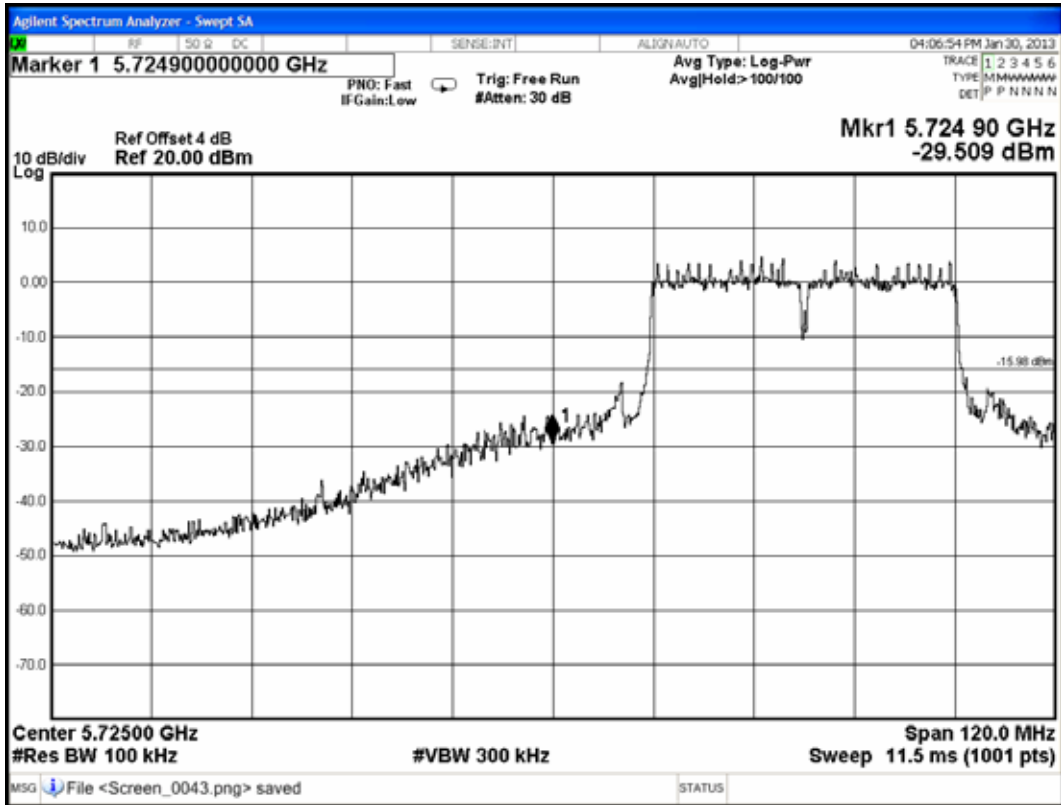
DTS 802.11n-HT40 (2.4GHz) Below Band edge



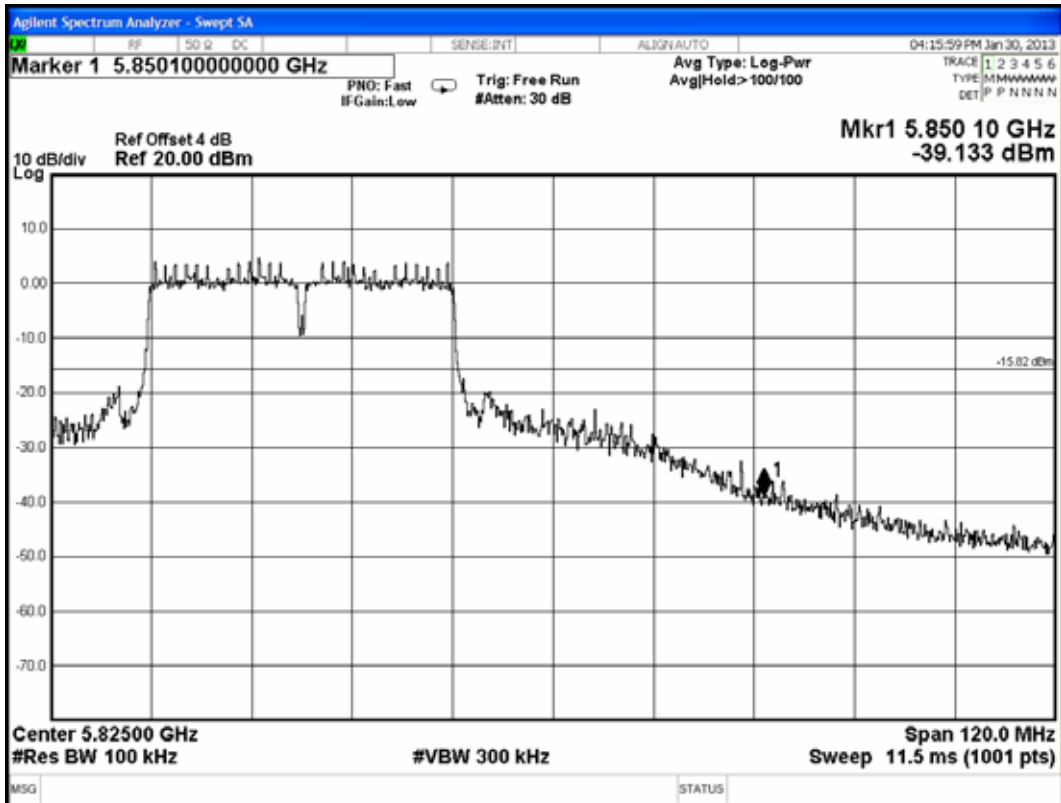
Upper Band edge



DTS 802.11n-HT40 (5.8GHz) Below Band edge



Upper Band edge



7.6.2. Bluetooth (Low Energy) Function

Test Date: Jan. 23, 2013 Temperature: 24 Humidity: 50%

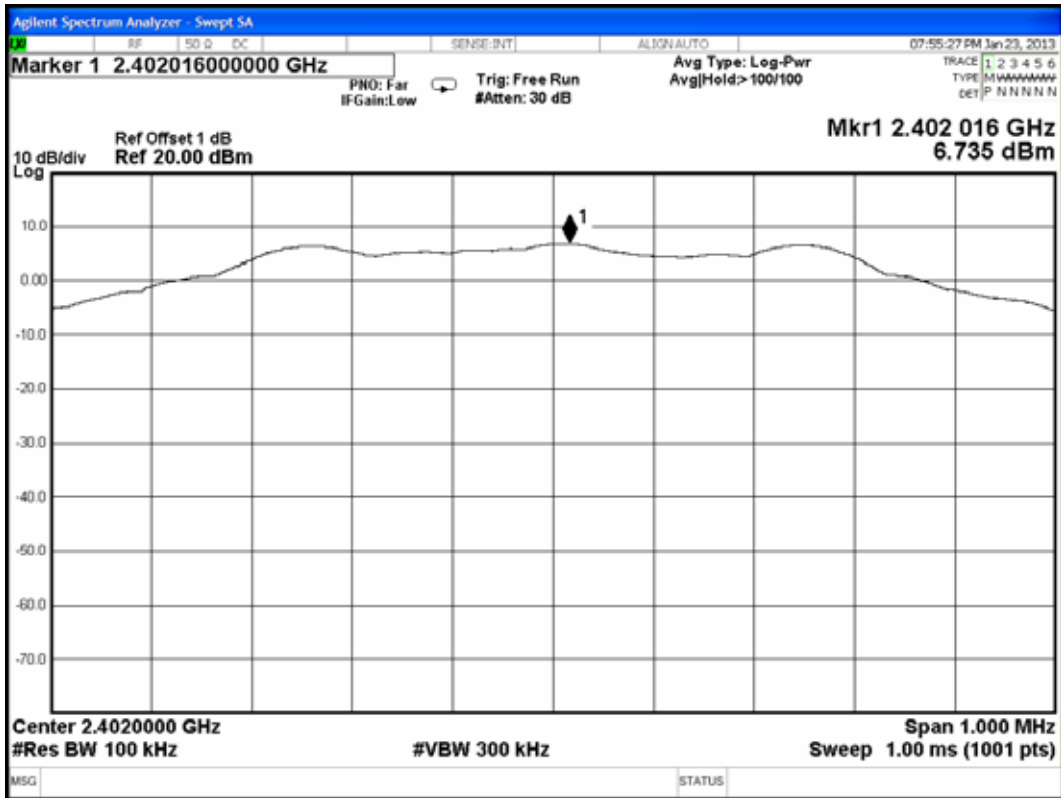
Below Band edge:

The highest emission level is -53.888dBm on 2.39990GHz.

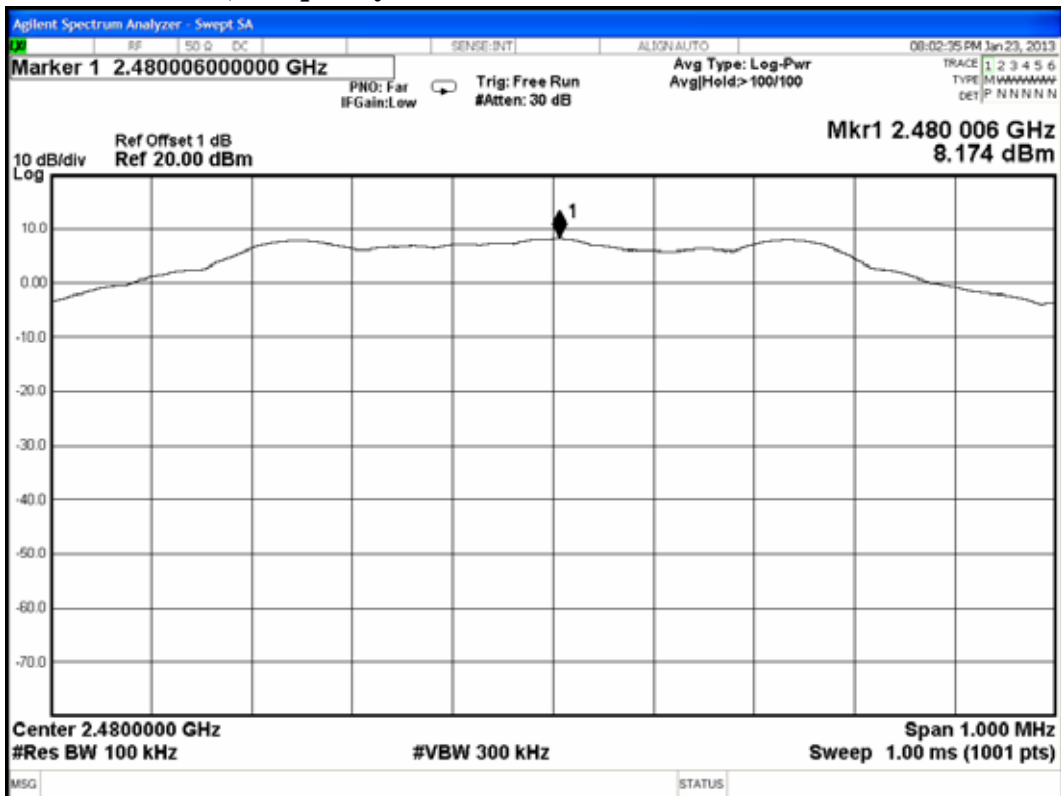
Upper Band edge :

The highest emission level is -55.831dBm on 2.48360GHz.

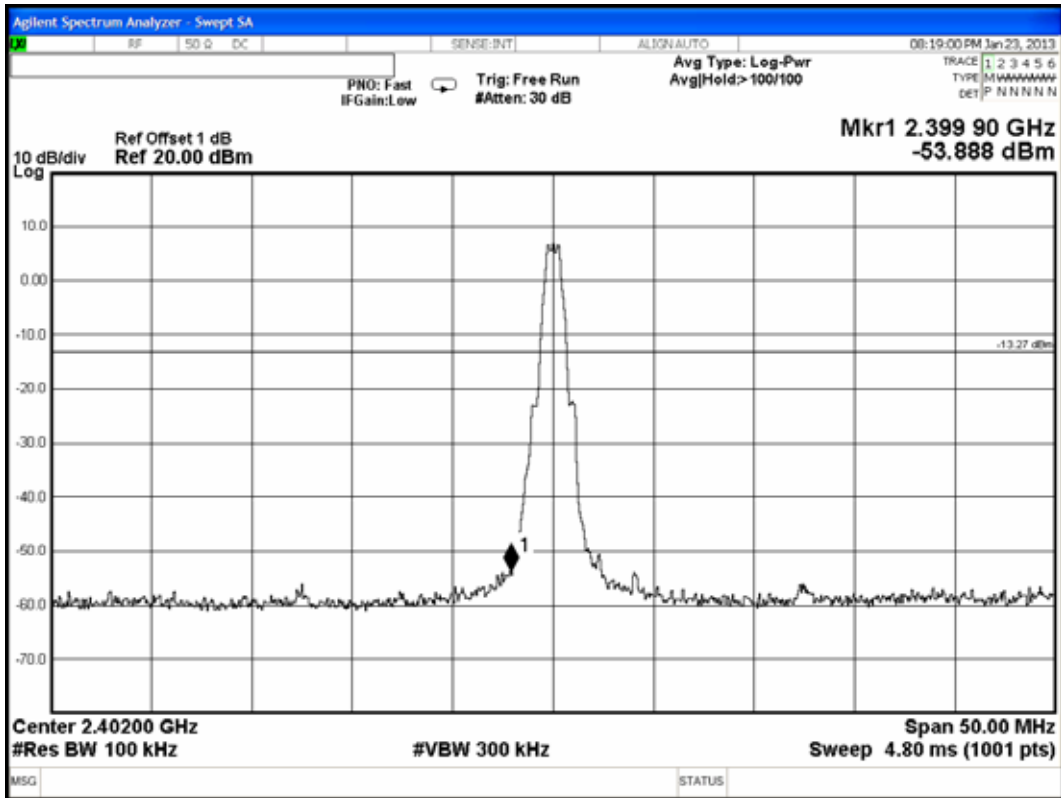
Reference Level, Frequency: 2402MHz



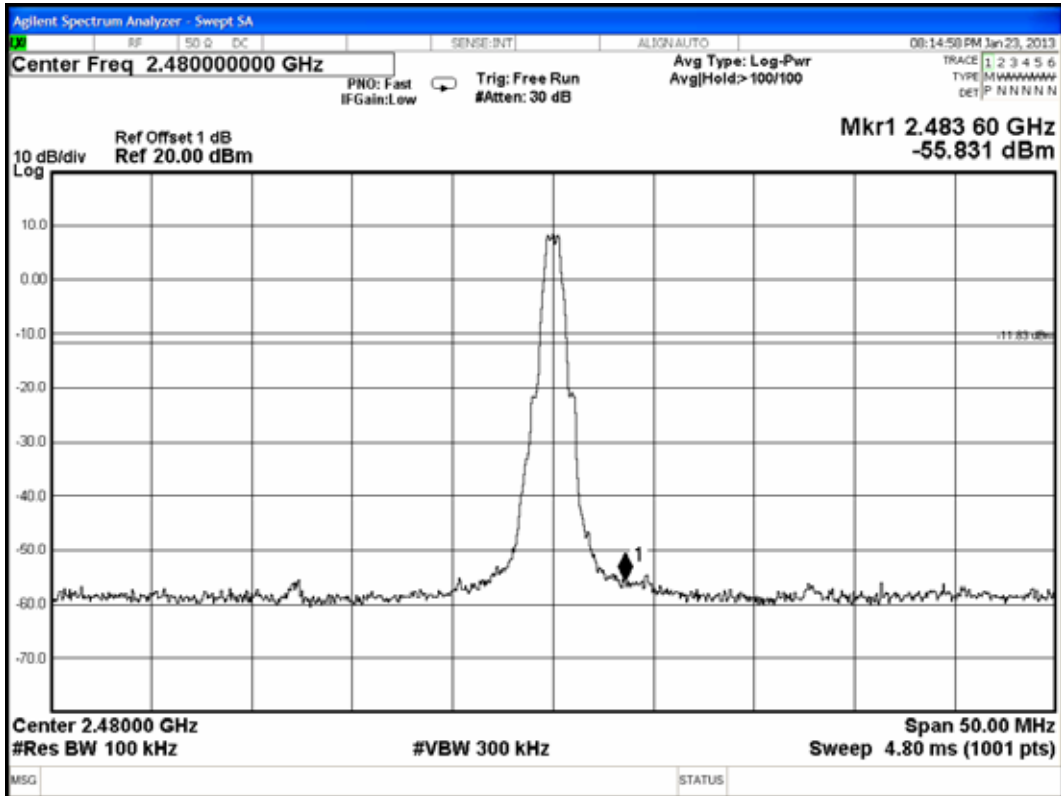
Reference Level, Frequency: 2480MHz



Below Band edge



Upper Band edge



8. POWER SPECTRAL DENSITY MEASUREMENT

8.1. Test Equipment

The following test equipment was used during the power spectral density measurement:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	N9030A-544	US51350140	Oct. 17, 12'	Oct. 16, 13'

8.2. Block Diagram of Test Setup

The same as section.4.2.

8.3. Specification Limits [§15.247(d), RSS-210 §A8.2 (b)]

The peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3kHz band.

8.4. Operating Condition of EUT

The test program “WL command” for WLAN and test program “WIN8App” for Lowe Energy was used to enable the EUT to transmit data at different channel frequency individually.

8.5. Test Procedure

The transmitter output was connected to the spectrum analyzer. The bandwidth of the fundamental frequency was measured with the spectrum analyzer using 100kHz RBW and ≥ 300 kHz VBW, set sweep time = Auto.

The measurement guideline was according to KDB 558074 D01 V02.

Pursuant to KDB 662911, we performed conducted tests for both antenna chains and submit test data measured on chain 0 as worse performance.

8.6. Test Results

PASSED. All the test results are attached in next pages.

8.6.1. WLAN Function

Pursuant to KDB 662911, the test results of 802.11n-H20/H40 have been included 3 dB is calculated from $10\log(N)$, where N is the number of outputs.

Test Date: Jan. 29, 2013 Temperature: 25

Humidity: 51%

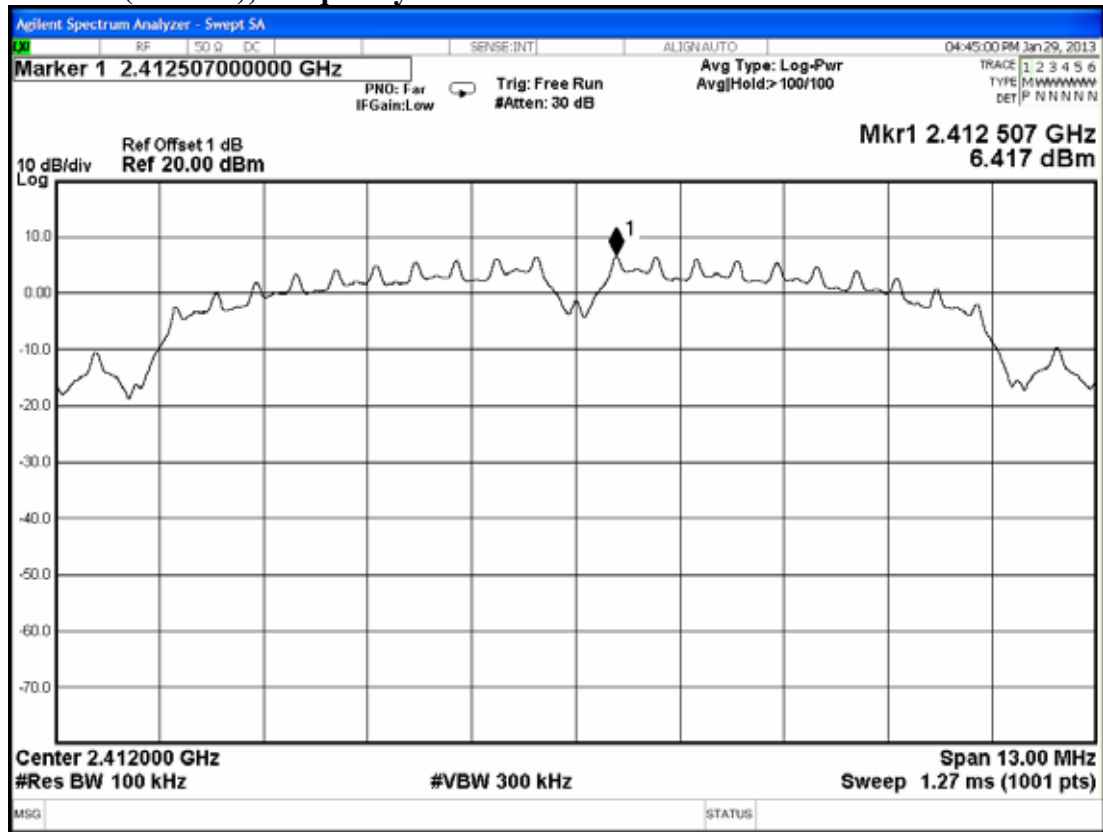
Test Date: Jan. 30, 2013 Temperature: 23

Humidity: 52%

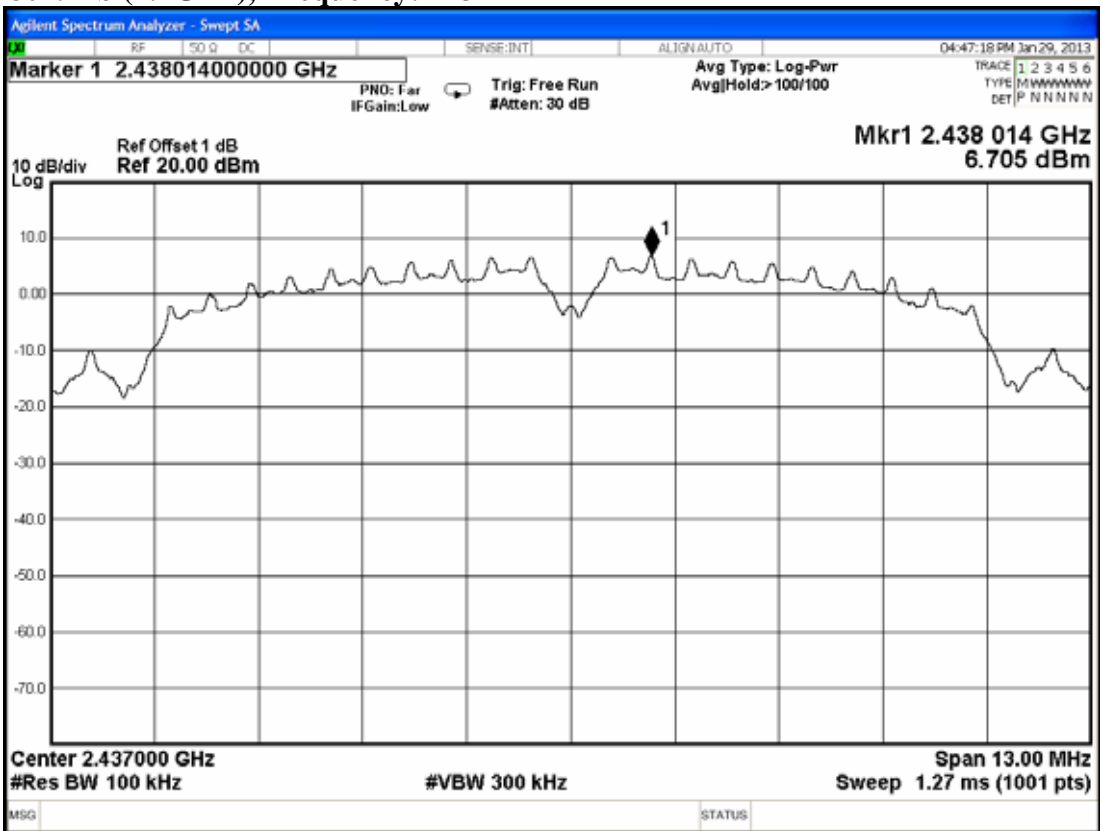
Mode	Type of Network	Channel	Frequency	Power Spectral Density (dBm)
1.	802.11b (2.4GHz)	CH 1	2412MHz	6.417
2.		CH 6	2437MHz	6.705
3.		CH 11	2462MHz	6.974
4.	802.11g (2.4GHz)	CH 1	2412MHz	2.711
5.		CH 6	2437MHz	3.233
6.		CH 11	2462MHz	0.463
7.	802.11a (5.8GHz)	CH 149	5745MHz	6.590
8.		CH 157	5785MHz	7.091
9.		CH 165	5825MHz	7.000
10.	802.11n-HT20 (2.4GHz)	CH 1	2412MHz	3.855
11.		CH 6	2437MHz	4.176
12.		CH 11	2462MHz	1.361
13.	802.11n-HT20 (5.8GHz)	CH 149	5745MHz	7.213
14.		CH 157	5785MHz	6.966
15.		CH 165	5825MHz	7.033
16.	802.11n-HT40 (2.4GHz)	CH 3	2422MHz	-2.007
17.		CH 6	2437MHz	-1.760
18.		CH 9	2452MHz	-4.115
19.	802.11n-HT40 (5.8GHz)	CH 151	5755MHz	4.018
20.		CH 159	5795MHz	4.176

[Limit: 8dBm]

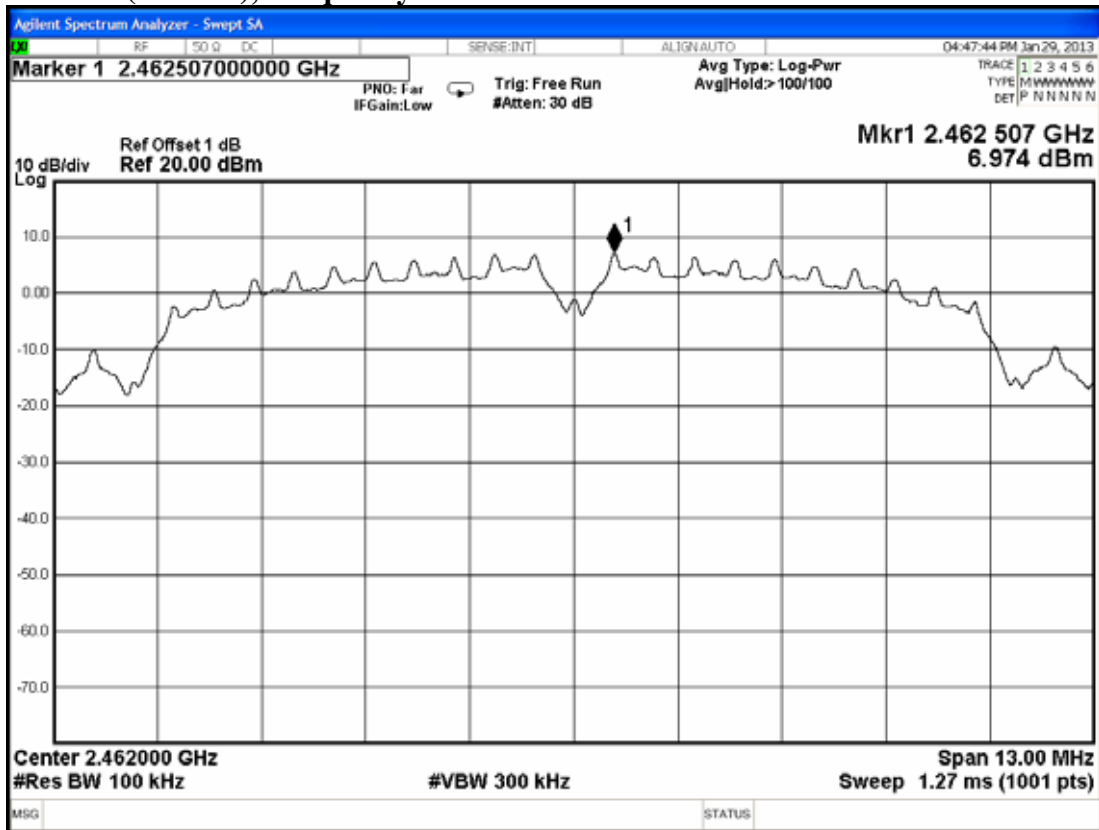
802.11b (2.4GHz), Frequency: 2412MHz



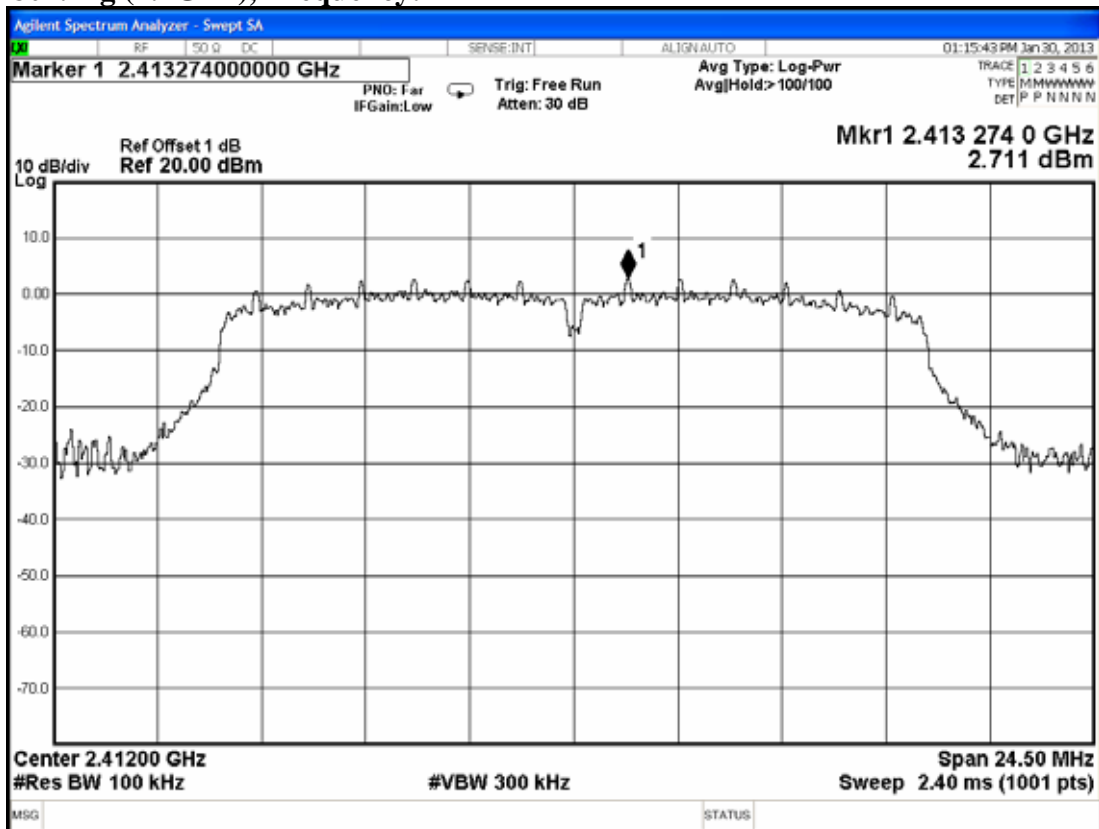
802.11b (2.4GHz), Frequency: 2437MHz



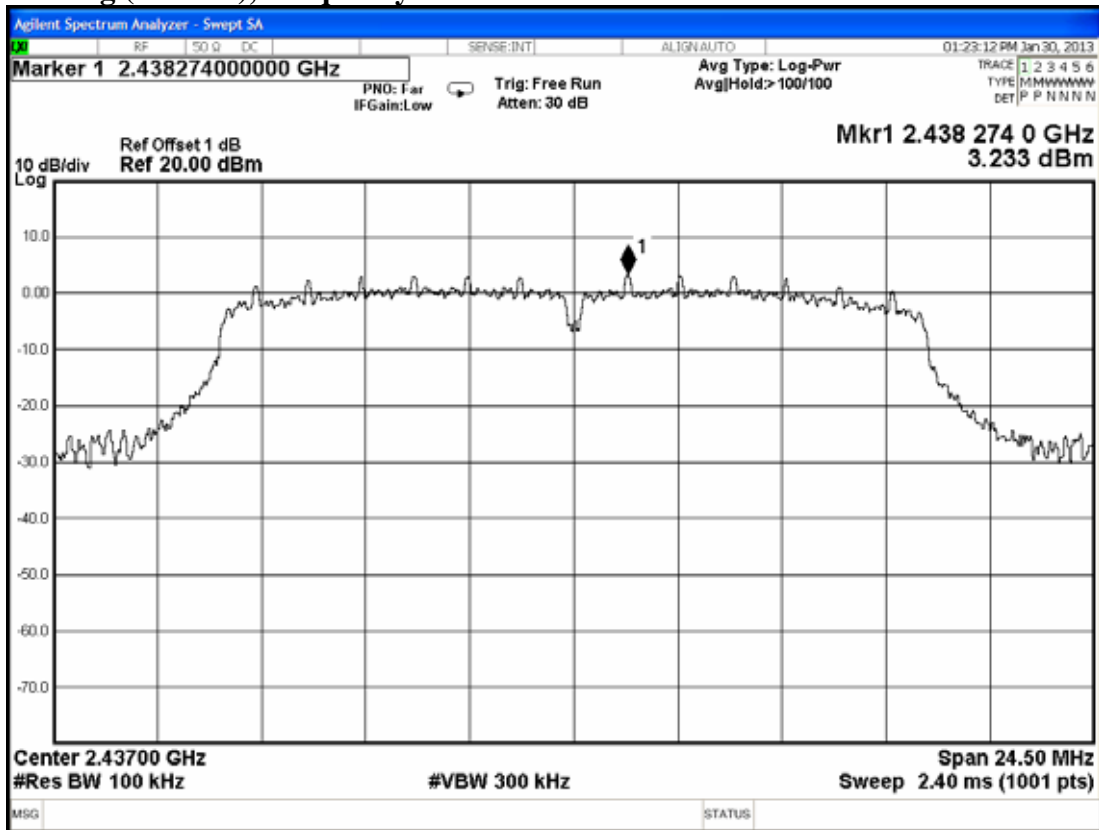
802.11b (2.4GHz), Frequency: 2462MHz



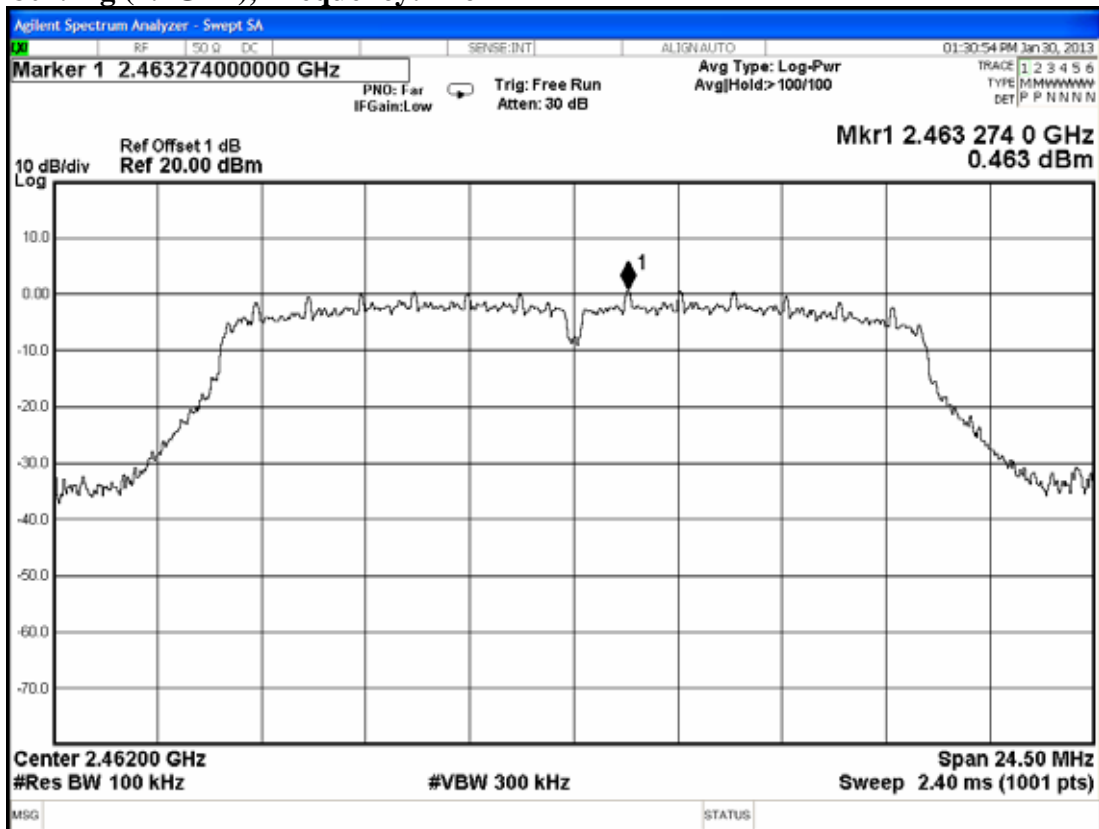
802.11g (2.4GHz), Frequency: 2412MHz



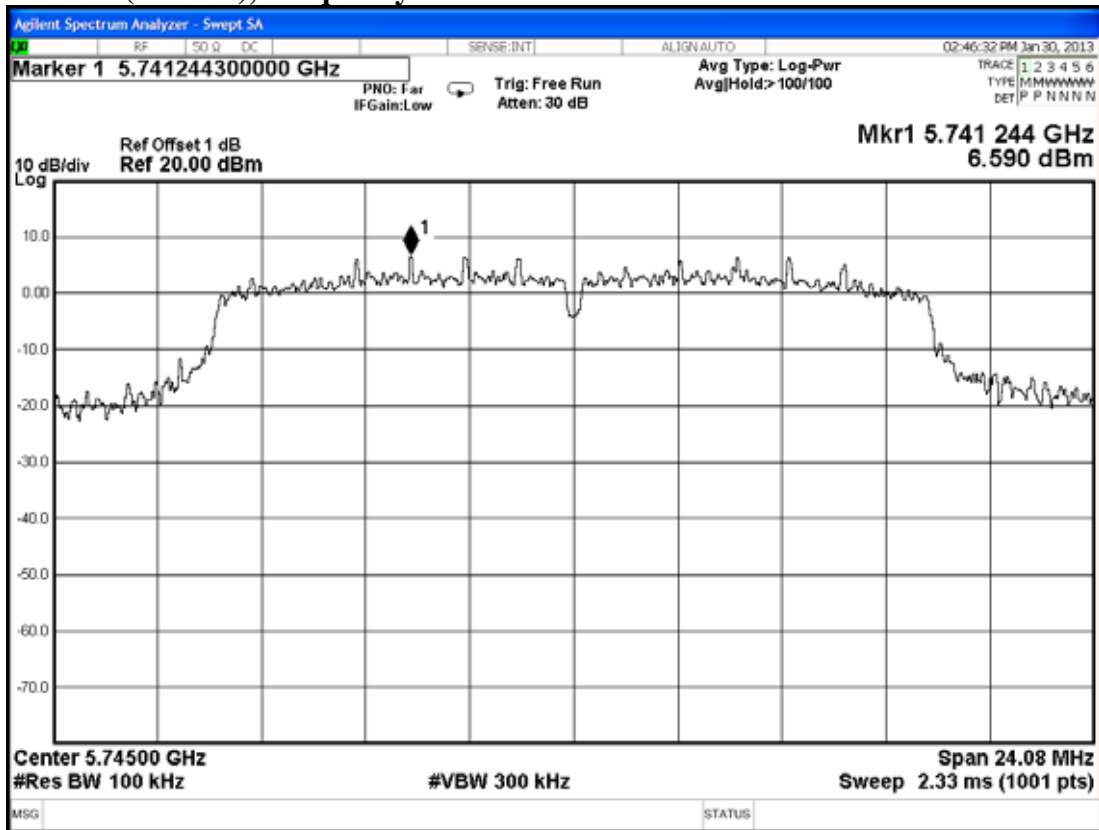
802.11g (2.4GHz), Frequency: 2437MHz



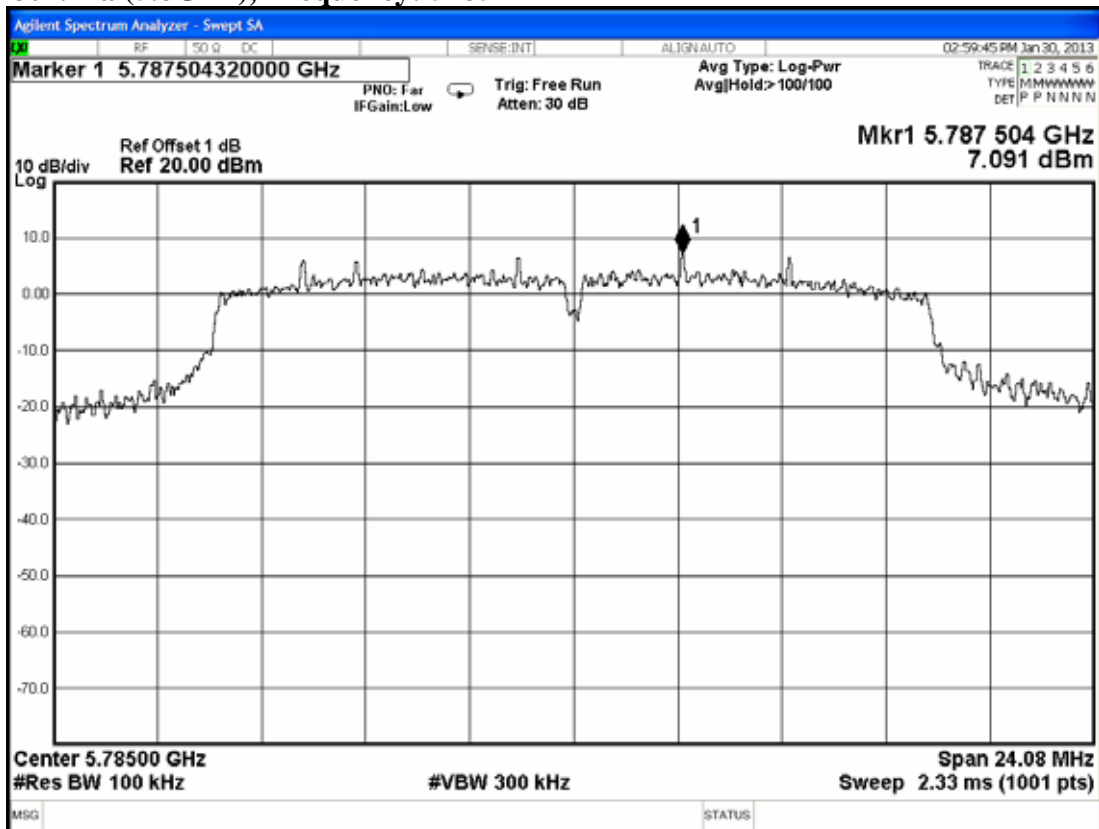
802.11g (2.4GHz), Frequency: 2462MHz



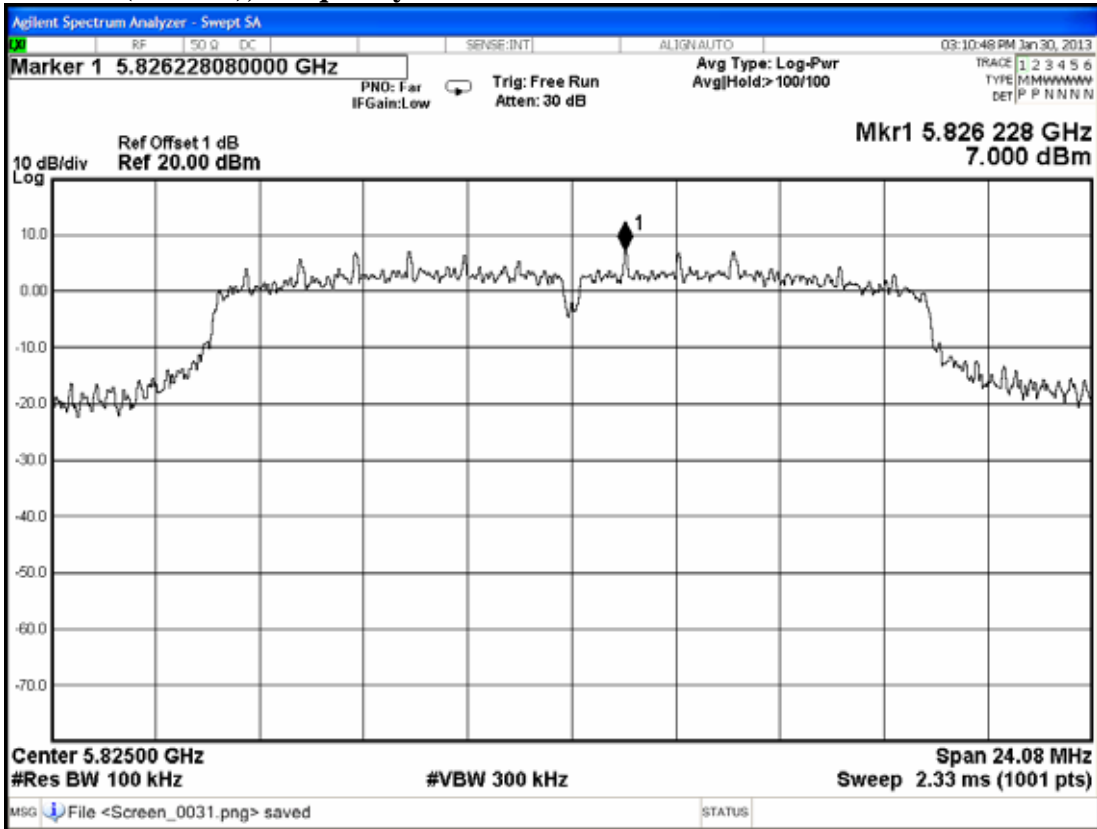
802.11a (5.8GHz), Frequency: 5475MHz



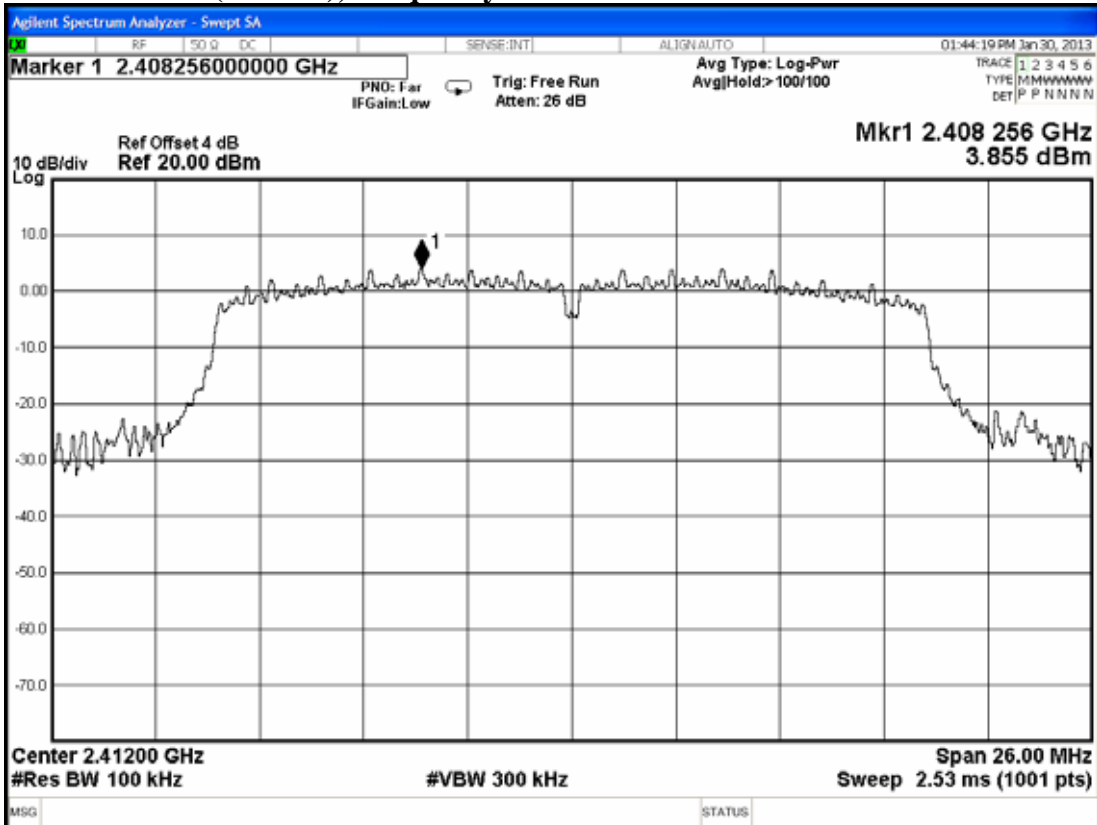
802.11a (5.8GHz), Frequency: 5785MHz



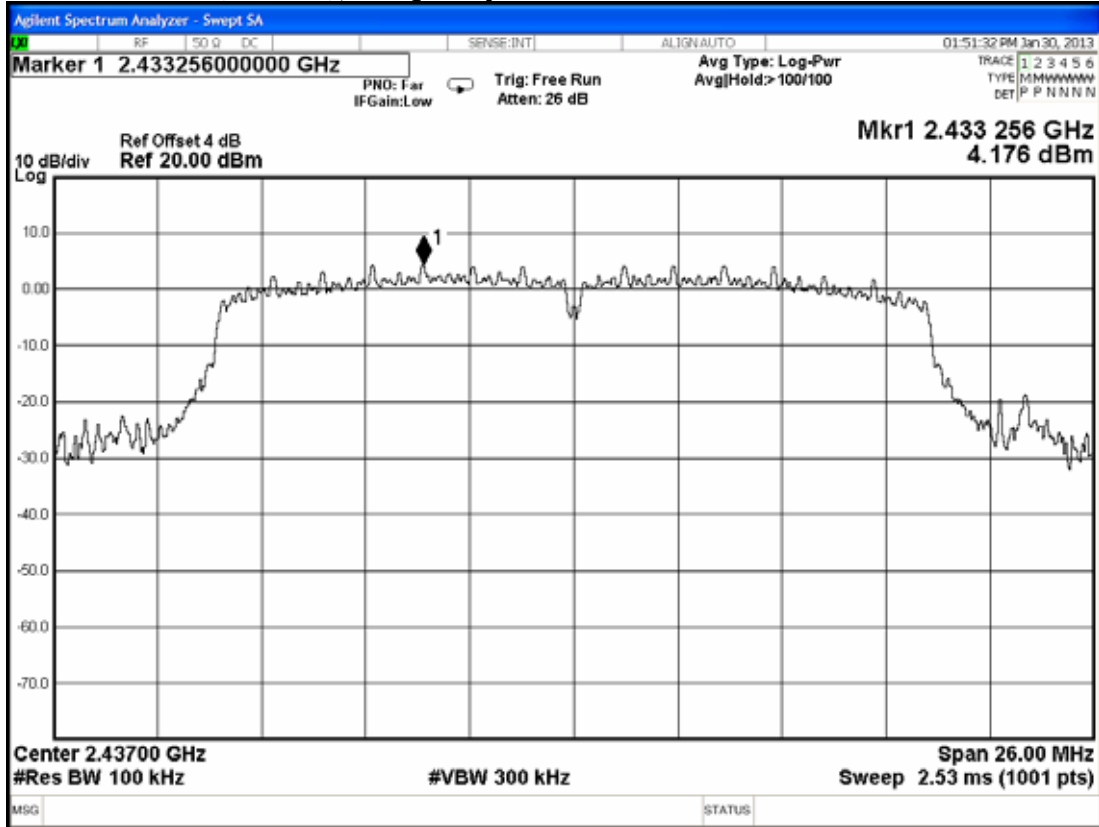
802.11a (5.8GHz), Frequency: 5825MHz



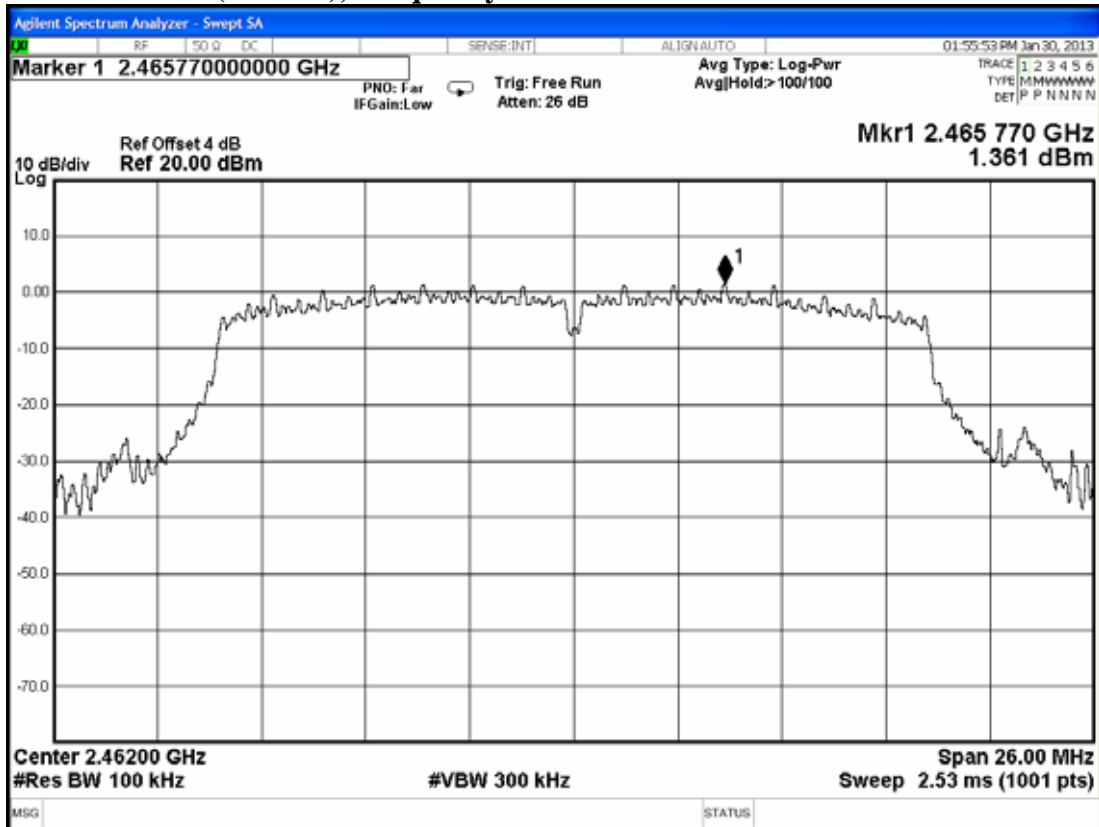
802.11n-HT20 (2.4GHz), Frequency: 2412MHz



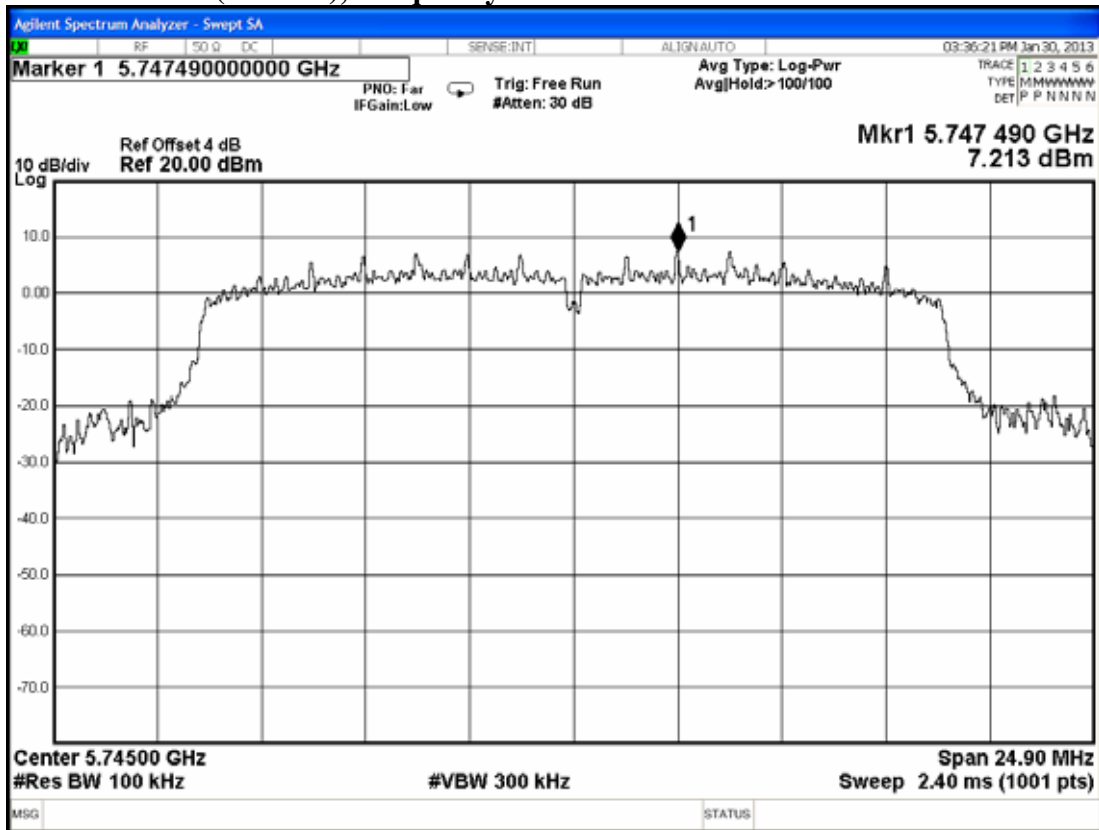
802.11n-HT20 (2.4GHz), Frequency: 2437MHz



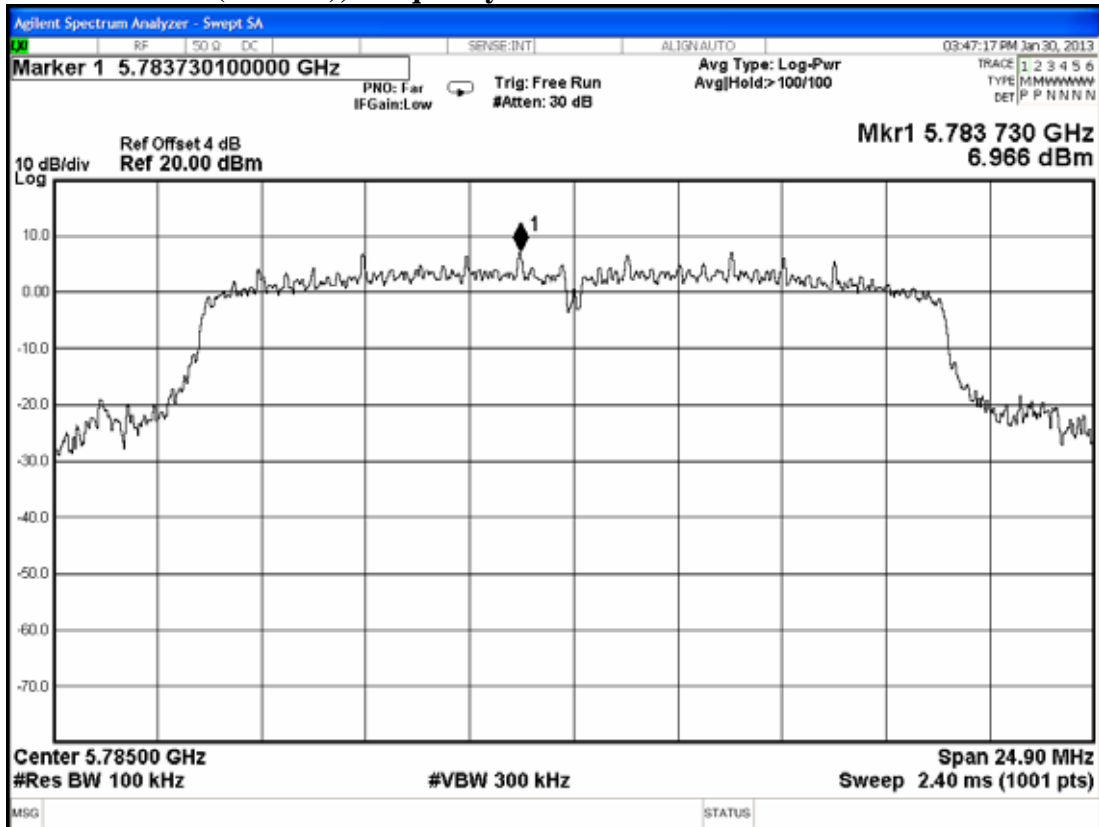
802.11n-HT20 (2.4GHz), Frequency: 2462MHz



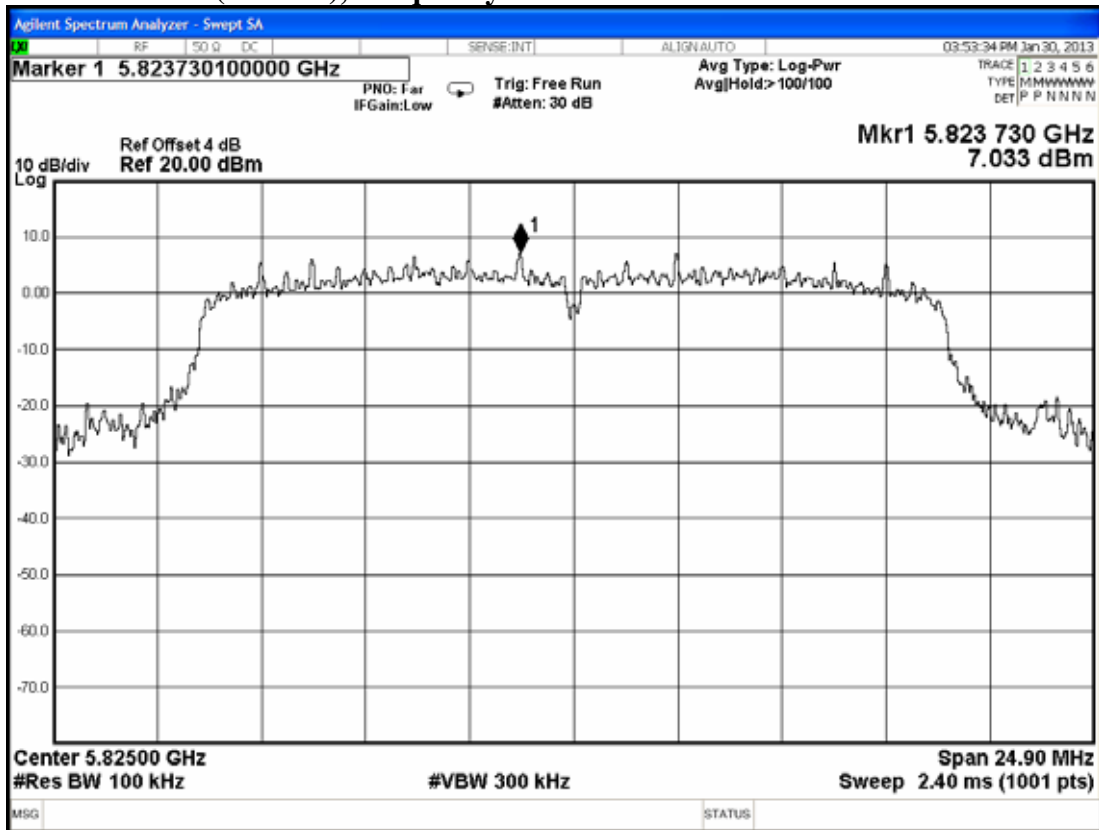
802.11n-HT20 (5.8GHz), Frequency: 5745MHz



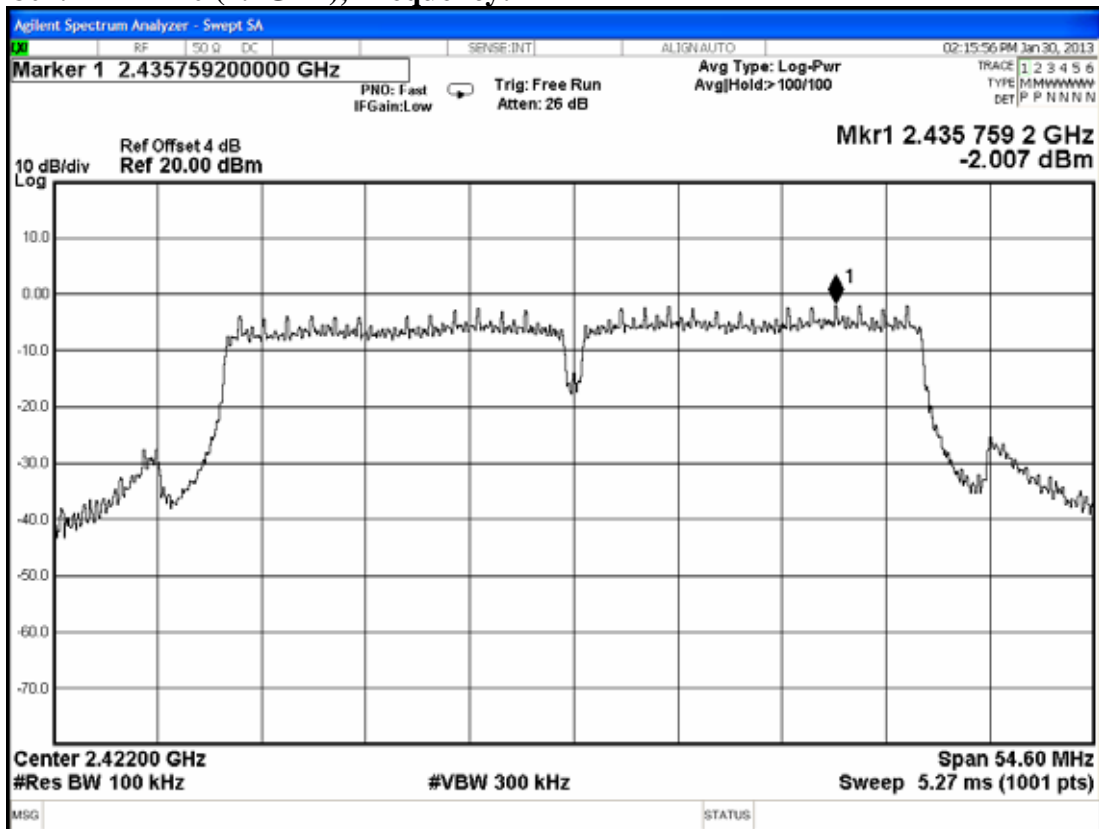
802.11n-HT20 (5.8GHz), Frequency: 5785MHz



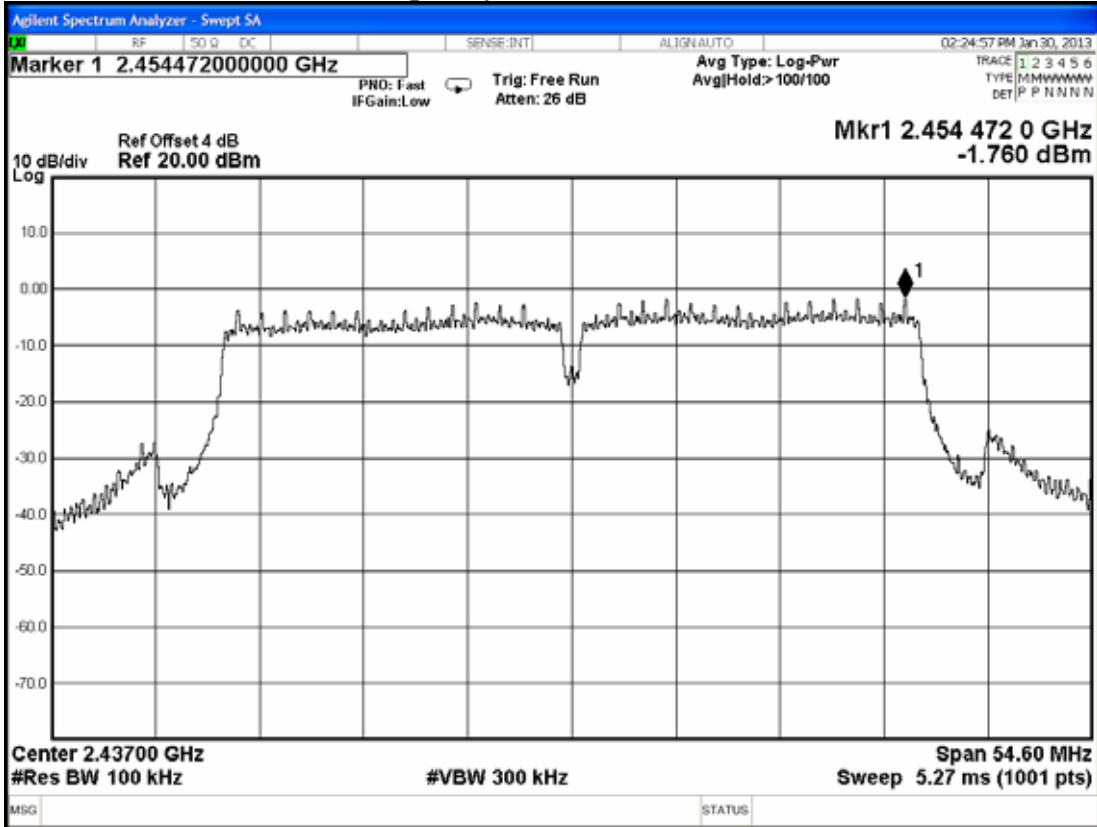
802.11n-HT20 (5.8GHz), Frequency: 5825MHz



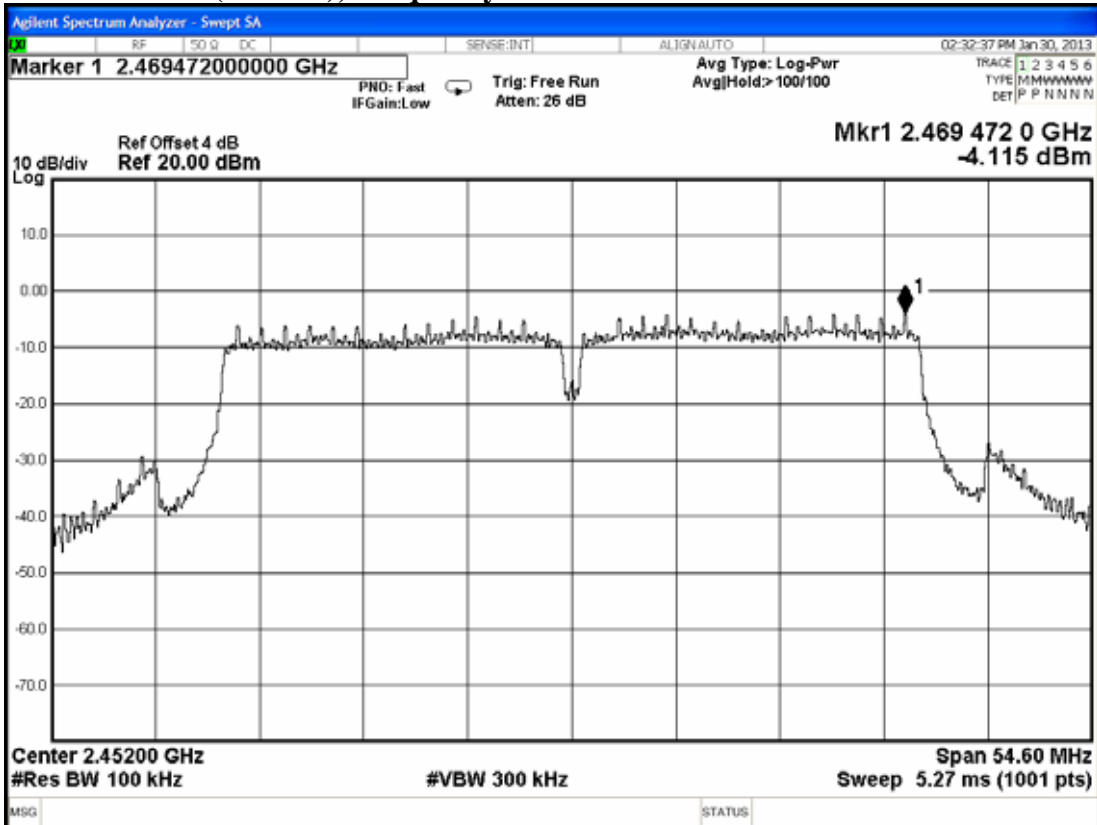
802.11n-HT40 (2.4GHz), Frequency: 2422MHz



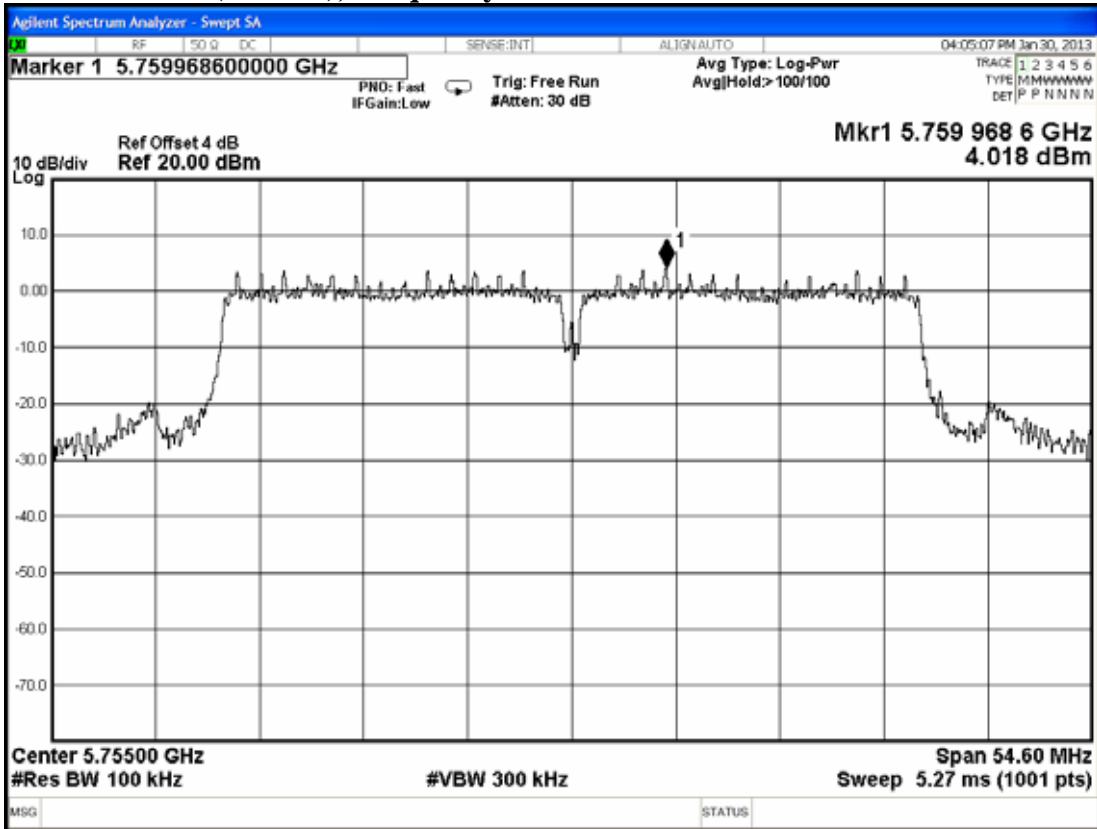
802.11n-HT40 (2.4GHz), Frequency: 2437MHz



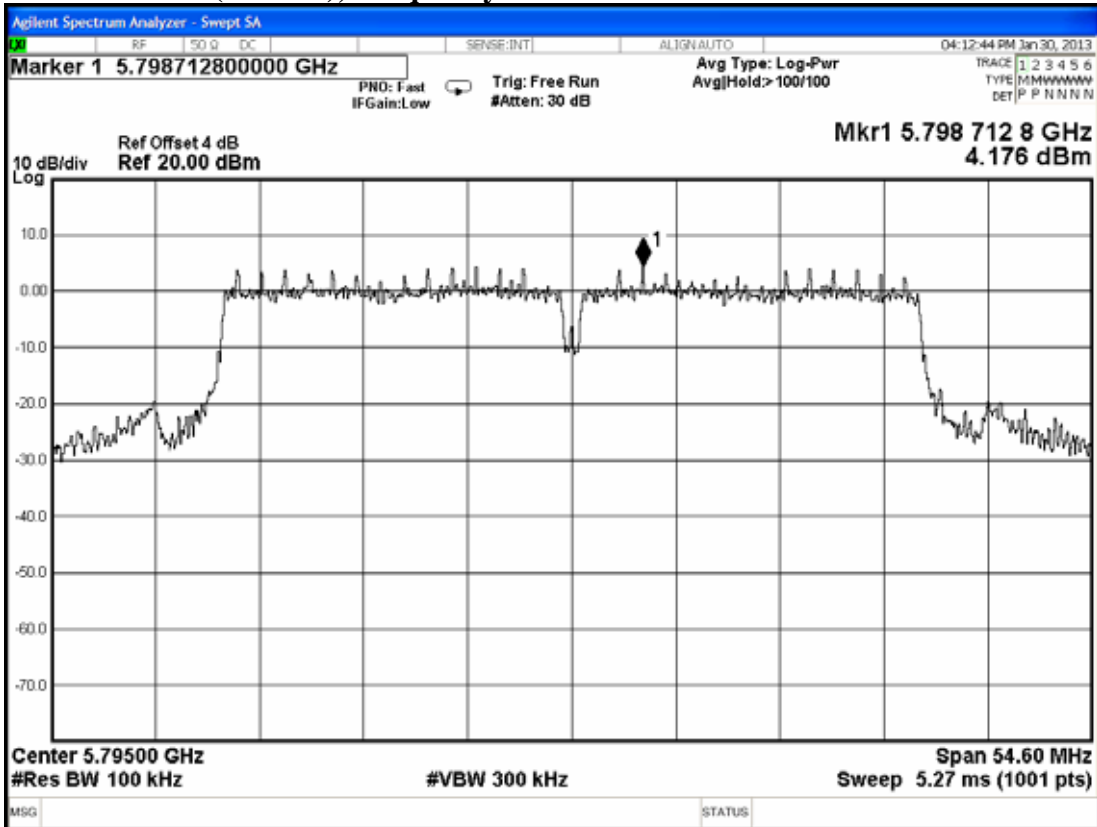
802.11n-HT40 (2.4GHz), Frequency: 2452MHz



802.11n-HT40 (5.8GHz), Frequency: 5755MHz



802.11n-HT40 (5.8GHz), Frequency: 5795MHz



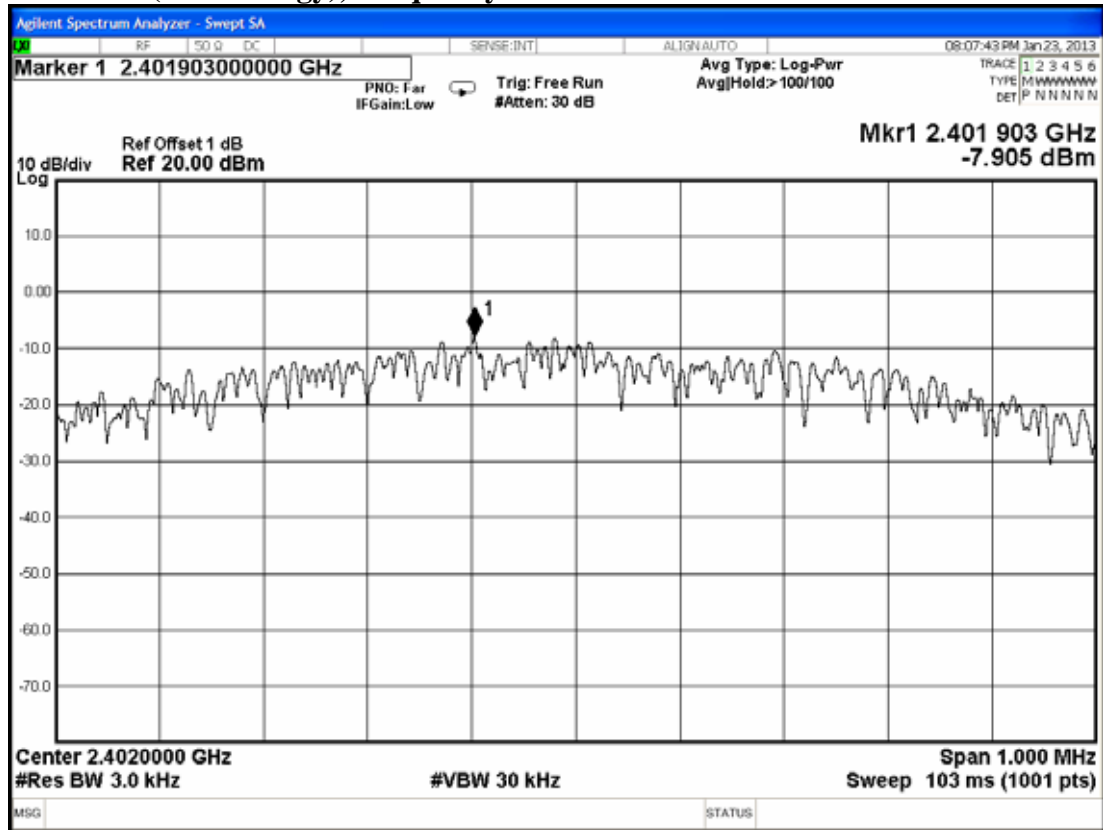
8.6.2. Bluetooth (Low Energy) Function

Test Date : Jan. 23, 2013 Temperature : 24 Humidity : 50%

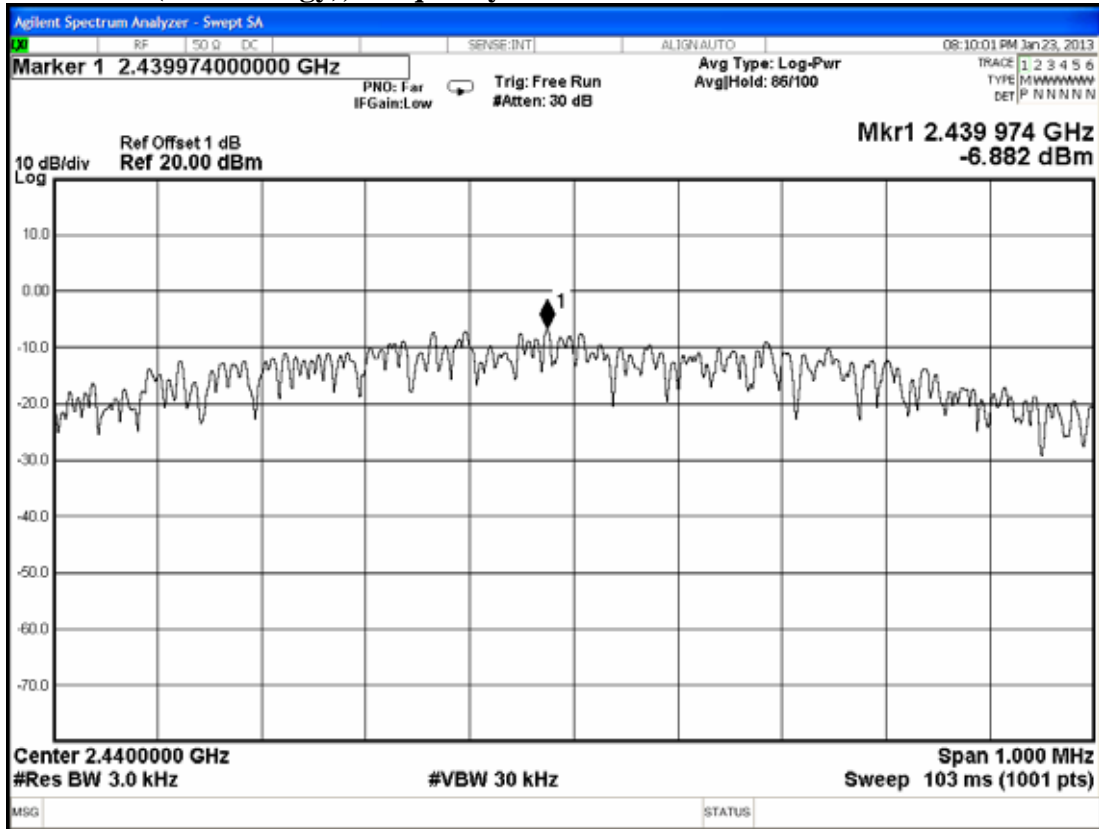
Mode	Channel	Frequency	Power Spectral Density (dBm)
1.	CH 0	2402MHz	-7.905
2.	CH 19	2440MHz	-6.882
3.	CH 39	2480MHz	-6.673

[Limit: 8dBm]

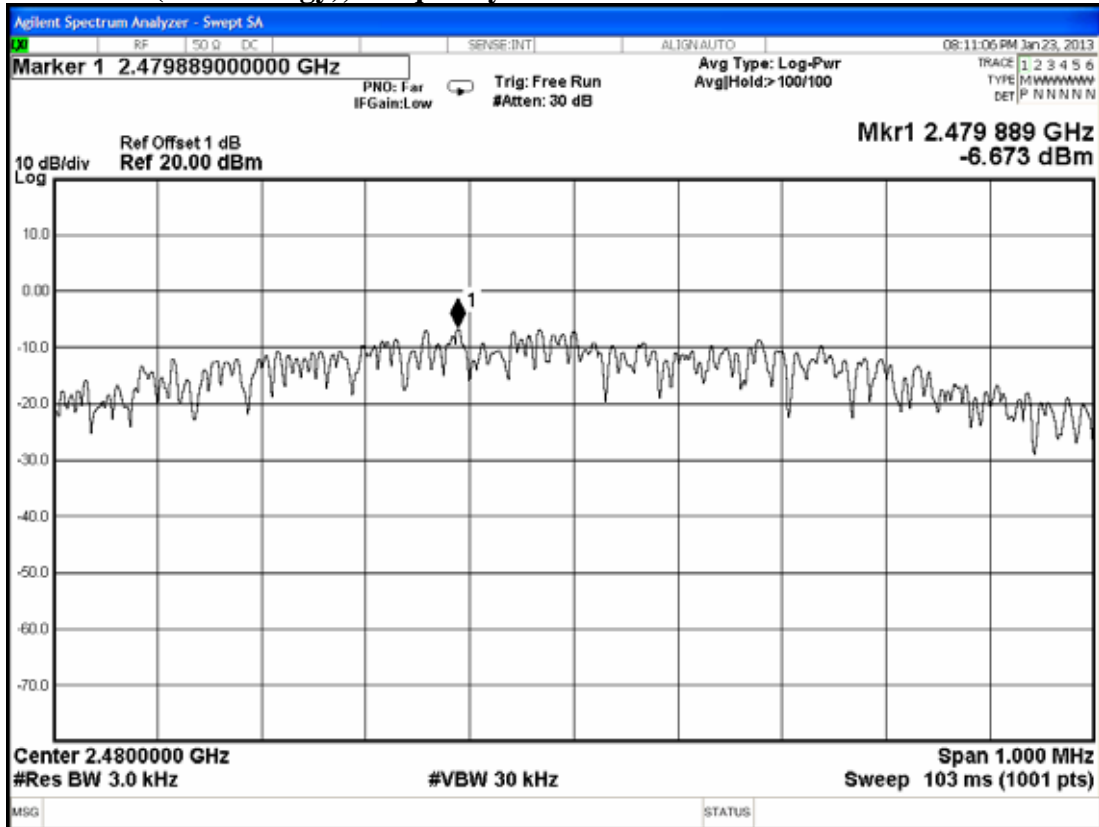
Bluetooth (Low Energy), Frequency: 2402MHz



Bluetooth (Low Energy), Frequency: 2440MHz



Bluetooth (Low Energy), Frequency: 2480MHz



9. DEVIATION TO TEST SPECIFICATIONS

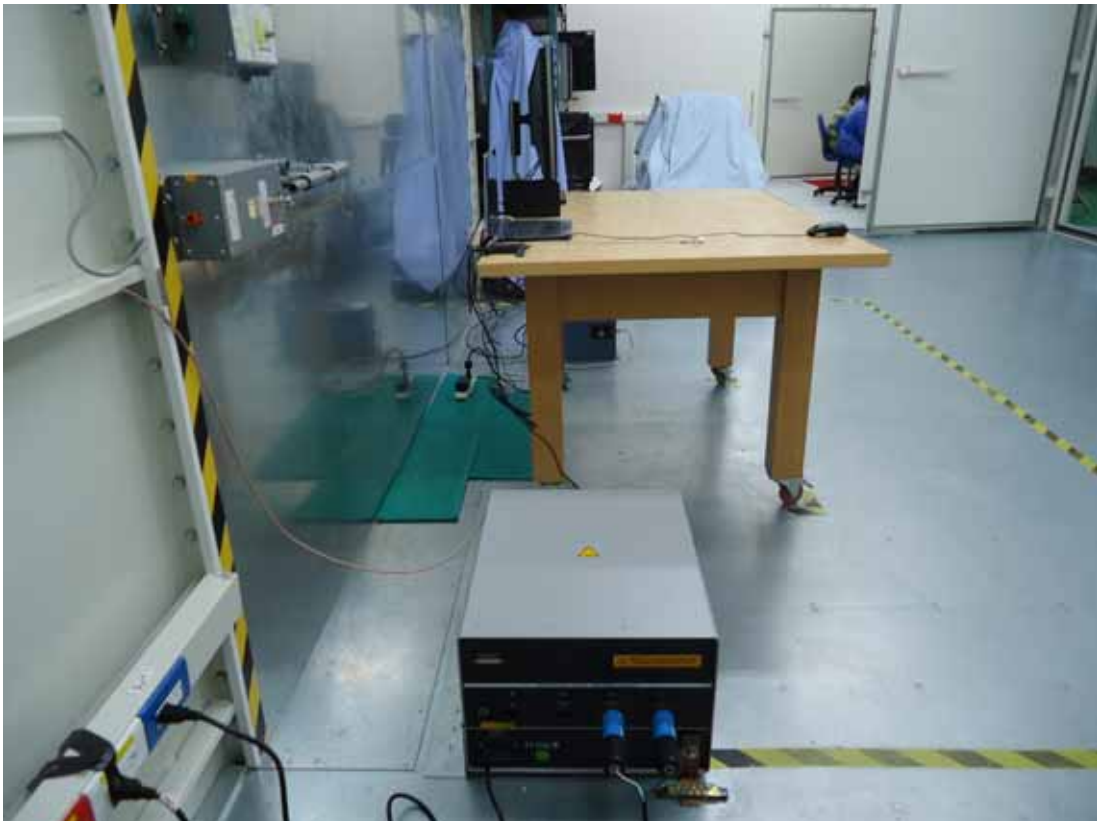
【NONE】

10.PHOTOGRAPHS

10.1.Photos of Conducted Disturbance Measurement



FRONT VIEW OF CONDUCTED MEASUREMENT



BACK VIEW OF CONDUCTED MEASUREMENT

10.2.Photos of Radiated Measurement at Semi-Anechoic Chamber

10.2.1.Frequency Below 1GHz



10.2.2.Frequency Above 1GHz



10.3.Photo of Section RF Conducted Measurement

